DOCUMENT RESUME

ED 172 739 IR 007 341

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TITLE ETV Program Production in the Ivory Coast.
INSTITUTION Academy for Educational Development, Inc., Washington, D.C.; Stanford Univ., Calif. Inst. for Communication Research.
SPONS AGENCY Agency for International Development (Dept. of State), Washington, D.C.
PUB DATE Aug 76
CONTRACT AID/afr-C-1158
NOTE 87p.; Not available in paper copy due to marginal legibility; For related documents, see IR 007 338 and IR 007 339

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS *Cost Effectiveness; Developing Nations; *Educational Change; Educational Resources; *Educational Television; Elementary Education; Media Research; *Program Evaluation; Rural Education
IDENTIFIERS *Ivory Coast

ABSTRACT

The efficiency of educational broadcasting in the Ivory Coast is assessed from the standpoint of what and how physical and human resources are utilized. Information was obtained by reviewing the large volume of documents that have been published about the project and through interviewing personnel involved in its management and operation. The general organization of the educational television complex in Bouake, the costs of the production system, and the process by which programs are produced are described as is interaction in production among the producer, the printed support materials writer, and the director. Also detailed in the report are the organizational structure and utilization of resources, feedback and evaluation mechanisms and change from film to videotape production. Appendices include a glossary of acronyms, and a list of production problems and solutions recommended. (Author/JEG)

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ETV Program Production in the Ivory Coast

by

Stella Evans

Steven Klees

August, 1976

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This report has been prepared by the Academy for Educational Development and the Stanford University Institute for Communication Research for the Agency for International Development, Bureau for Africa, Office of Africa Regional Affairs under Contract No. AID/afr-C-1158.

IR007341

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SUMMARY

In the late 1960s the Ivory Coast began planning for a nationwide educational system reform designed to improve the reach and quality of educational offerings, a principal component of which was to be the intensive utilization of instructional television in the primary schools. In the autumn of 1971 their educational television system began its first broadcasts to about 20,000 first grade students. In each subsequent year the system covered an additional grade level and additional schools. This Fall will mark the first year of full six grade coverage, with the ETV system enrolling over 300,000 students. It is planned that by 1980 all primary schools in the country will be using educational television and that by 1985 a 100% enrollment of the 6-11 year old age group will be achieved. In many respects the Ivorian educational reform represents an international effort, with substantial financial and technical assistance provided by the French in the area of ETV program production, and, to a lesser degree, by the Canadians in the area of printed support materials production.

This report is a part of an internationally coordinated effort to evaluate various aspects of the efficacy of this reform, both from the point of view of improving decision-making internal to the Ivory Coast as well as toward providing information to other countries that will allow them to learn from, and build upon, the Ivory Coast's experience. This particular effort represents what we consider to be a rather unique attempt to combine a television program production perspective with an economic one in order to examine closely the Ivory Coast's system of educational television (ETV) program production. The focus is on the efficiency of the system, from both the standpoint of what physical and human resources are utilized and how those resources are organized. Information was gathered by reviewing the large volume of documents that have been published

about the project and through interviewing personnel involved in the management and operations of the production system.

In Section II of this report we describe the general organization of the ETV Complex in Bouake, the costs of the production system, and the process by which programs are produced. The Production Complex is a multi-functional organism, employing about 550 people and housing two teacher training schools in addition to producing a wide variety of ETV programs and accompanying printed support materials. Presently the Complex is housed in a former school building and construction is underway on a modern new facility that will be ready for occupancy by Fall, 1977. Plans for broadcast and production output have been consistently more ambitious than achievements. While the target figure is to broadcast about 135 hours/grade/year (in programs 10 minutes or less in length), in 1974-1975 only about 80 hours were broadcast to each grade. During the 1975-1976 school year the goal was to produce about 315 hours of programming (directed towards students and teachers) but only 201 hours were produced. Whether these discrepancies reflect insufficient resources devoted to the task or inefficiencies within the production process is difficult to assess, although planning documents indicate that production capacity should be 365 hours annually which means that the system is presently operating at only 60% efficiency. Our discussion in Section III of this report points out problems that appear to be reducing system efficiency.

Our best estimate of the costs of ETV program production indicated that the recurrent costs (personnel, operations, and administration) for 1975 were 637 million CFA francs, which, given a production of 201 hours of programming, yields a short run marginal cost of producing an hour of ETV programming of 3.17 million CFA francs. If highly paid foreign technical assistance were not utilized (as planned for 1980) this cost would only be 2.45 million CFA francs. To estimate

long run average production costs, we must include expenditures for facilities, equipment, and human capital investment (in the form of expertise of foreign technical assistants).

We estimate average costs under three assumptions concerning the efficiency and production capacity of the system: (a) that the existing facilities, equipment, and personnel can and do produce 201 hours of programming annually; (b) that the existing facilities can produce 365 hours and that proportionally more personnel than are presently available are added so that 365 hours are annually produced in future years; and (c) that the existing facilities, equipment, and personnel can and henceforth do produce 365 hours of programming annually. Case (a) essentially represents the situation that presently exists, while cases (b) and (c) posit efficiency improvements. Below we present the average annualized long run cost per hour of production and an average cost estimate that takes into account that each program is hypothesized to last four years, under each of the three assumptions:

	Average Cost of Production	Average Cost of Production Assuming 4 Year Life
	(in millions of CFA francs)	
Case (a)	4.40	1.42
Case (b)	3.52	1.05
Case (c)	2.42	.72

Which pair of figures best represents the long situation in the Ivory Coast will depend on the extent to which improvements can be made in the efficiency with which facilities, equipment, and personnel are utilized. Nonetheless, from comparisons with other projects (see Table VIII) we see that the Ivorian system is a relatively expensive one in any case, although given the large actual and projected student enrollments, per student production costs may be considered

reasonable.

In Part C of Section II we describe in detail the different stages in the process of program production and the interactions between the three principal actors in the process--the producer, the printed support materials writer, and the director. This description forms an essential background, along with the previous discussion of system organization and costs, to the consideration of four key issues in Section III: the organizational structure and utilization of resources; the process of Ivorization; feedback and evaluation; and film vs. videotape production.

There was evidence of substantial frustration among Complex personnel. The primary problems seem to be a lack of sufficient organization and planning to ensure that even the most straightforward necessities of program production are accomplished and the lack of consistent policies regarding the duties of the various types of skilled personnel. Recent policies have been instituted to try to correct these deficiencies, but it remains to be seen if they will be successful.

Crucial to the solution of these organizational problems is improvement in the training of Ivorians to take over the management and operation of the ETV Complex, as is planned for 1980. Training to date for the Ivorians appears to have been inadequate--with respect to both the number of Ivorians trained and the quality of the training. Part of the problem is the lack of any reasonable basis for the selection of those Ivorians who are hired and then trained for skilled positions. The difficulties are heightened by the lack of job related promotion criteria which, as one would expect, creates motivational problems, combined with a lack of sufficient monetary incentives to retain the best individuals. Of at least equal importance is the inadequacy of training of many of the French technical assistants and the lack of time available to

give substantial on-the-job training to the Ivorians.

The Ivorian ETV system has made a number of efforts to set up a viable feedback and evaluation system, and to integrate that into the program production system. Unfortunately such efforts appear to have been only marginally successful, as is true of most similar endeavors in ETV systems in other nations, both developed and developing. The key problem appears to be the heavy demands of the planned production schedule which allow little time for serious attention to feedback and evaluation combined with the expense of making substantial revisions to completed programs.

All the problems above form an interwoven fabric in which a heavy planned production schedule, inadequately trained personnel, and a lack of sufficient planning and organization combine to yield a poorer output than the system is potentially capable of producing. This in no way is meant to negate the many good points of the Ivorian system--programs do get done, and with care and sophistication; there is greater than usual diversity of production technique; the printed support materials are extensive and generally tie closely to the television curriculum; and there is ample evidence of ability, willingness, and motivation among many production personnel. The basic ingredients for a good ETV program production system are there. Perhaps now that the initial coverage of the full six grades of primary school with ETV is almost accomplished more time can be devoted to making improvements in the efficiency with which the system operates--such improvements can potentially yield a greater quantity and quality of program output, as well as reduce total and unit costs.

I. INTRODUCTION

Over the past several decades both developing and developed nations have been facing increasing pressures on their educational systems. The situation, most acute in developing countries, has stemmed from a series of interrelated factors, such as rising demand for student places in the formal educational system, the escalating costs of meeting this demand, the scarcity of certain educational resources (particularly trained teachers in rural areas), and the discrepancies between the outputs produced by current educational practices and those desired for social and economic development. Additionally, the inertia and inefficiency of existing educational systems has made it difficult for them to respond effectively to changing needs. Such problems have led more and more nations to experiment with new instructional technologies, such as radio or television based systems, as a means of providing educational services. The hope has been that new technologies applied to education will be the key to improving system productivity, as has been claimed for them in most other sectors of society.

In the late 1960s the Ivory Coast began planning for a nationwide educational system reform designed to improve the reach and quality of educational offerings, a principal component of which was to be the intensive utilization of instructional television* in the primary schools. This report is a part of an internationally coordinated effort to evaluate various aspects of the efficacy of this reform, both from the point of view of improving decision-making internal to the Ivory Coast as well as towards providing information to other countries that will allow them to learn from, and build upon, the Ivory Coast's experience. This particular effort represents what we consider to be a rather unique attempt to combine a television program production perspective with an economic one in order

*The terms instructional television (ITV) and educational television (ETV) will be used interchangeably to refer to the Ivorian project, since, although the former is more accurate given current usage of the term in this country, the latter term is used by the Ivorians.

to examine closely the efficacy of the Ivory Coast's system of educational television program production. In this section Part A will present a brief history and description of the Ivory Coast project, Part B will discuss the conceptual foundation from which this study was undertaken, and Part C will describe the methods used.

A. Description of Ivory Coast Project

In recent years, prior to the reform, the Ivory Coast had been facing an increasingly serious set of problems associated with the provision of primary school education: first, only a small percentage (about 40%) of the relevant age group population were enrolled in primary school; second, the efficiency with which students passed through the school system was low due to high repetition rates, and to a lesser extent, high dropouts rates; and third, the primary schools seemed to be encouraging unwanted rural-urban migration. In response to these and other concerns the Ivory Coast is in the process of introducing a substantial educational reform, which includes the introduction of one of the largest scale ETV systems of its kind to carry a significant portion of primary school instruction, the utilization of the ETV system for non-formal post-primary and adult education, and a large effort to upgrade primary school teacher qualifications through the use of new teacher training programs and institutions, as well in-service ETV training.

In the autumn of 1971 the educational television system of the Ivory Coast began its first broadcasts to about 20,000 first grade students. In each subsequent year the system covered an additional grade level and additional schools. This Fall will mark the first year of full six grade coverage, with the ETV system enrolling over 300,000 students. It is planned that by 1980 all primary schools in the country will be using educational television, and that by 1985 a 100% enrollment of the 6-11 year old age group will be achieved.

In many respects the Ivorian educational reform represents an international

effort; although it is planned that the Ivory Coast will assume complete control and financial responsibility for the project by 1980, at present substantial aid is received from foreign sources. The French government played a substantive role in initiating the reform and presently subsidizes a large portion of the ETV components of the reform. The Canadian government is also supplying aid, primarily in the form of technical expertise, equipment, and operations expenses for the production of printed support materials. Various United Nations agencies are contributing to the teacher training component of the reform. The World Bank is supplying funds for several planning and evaluation activities as well as financing about 50% of the costs of the new ETV complex. Finally, other nations, including Belgium, the United States, and West Germany, are providing small contributions, mainly directed toward system evaluation.

The primary school reform, along with its associated ETV component, was placed under the central administrative control of a newly formed subdivision of the Ministry of Education, the Secretary of State for Primary Education and Educational Television, located in Abidjan. In essence this placed the ETV reform directly under the supervision of those in charge of primary school education, a step that seems to have successfully avoided some of the more serious intergovernmental rivalries that are often found when such a procedure is not followed. This year the Secretariat was promoted to the status of a full ministry, which serves to underline the importance given to the reform of the primary school system.

Television program production is located in an older educational establishment in Bouake that was converted into an ETV/teacher training complex. Construction of a new complex in Bouake to house these facilities, to be completed in 1977 has begun. Initially, ETV programs were almost entirely film based, as opposed to videotape based, but in recent years videotape is being increasingly utilized. The ETV complex contains a large film editing division and also has the

capabilities to produce technically sophisticated animations. ETV program production has been planned in order to broadcast about one hour per day per grade of television lessons, usually in programs no longer than ten minutes.

The television programs are transmitted over the only television channel in the country. Prior to the initiation of the ETV system, television programs were broadcast for only an hour at mid-day and in the evening and thus the ETV system was designed to rely on the transmission system's excess capacity. In 1971 TV broadcasts reached two-thirds of the nation's land area, but plans were made and are being implemented to extend the coverage via the construction of more microwave links. In a few years there should be virtually 100% coverage.

One of the main problems in developing the ETV system was how to handle the large regions in the country that did not have electricity to operate the television receivers (about 85% of the schools are in such areas). The decision was made to utilize battery power and thus each school using television in a non-electrified areas has at least one set of thirty-two, 1.45 volt battery elements, hooked in series, and capable of running a television receiver. Present plans are to equip each six classroom school with six televisions and two sets of batteries; each three classroom school (two grades to a classroom--this is quite common in the Ivory Coast) would be equipped with three television receivers and one set of batteries.

Finally, it should be noted that part of the primary school reform involved a substantial increase in the quantity and quality of printed material that the student and the teacher receive. Printed support materials are usually in the form of workbooks keyed to the ETV lessons.

B. Conceptual Foundation

This study is a component of the United States Agency for International

Development contribution to the evaluation of ETV in the Ivory Coast. AID's* effort in this regard is oriented in part toward an economic evaluation of the system, focussing on a cost analysis of the existing Ivorian ETV system and various alternatives to it that will be useful to audiences both internal and external to the Ivory Coast. Economic analysis as applied to instructional technology systems is, in many respects, still in its infancy. This is less true of cost analysis (see Jamison, Klees, and Wells, 1976 for the most recent and complete work on the subject) than of cost-effectiveness and cost-benefit analysis. Nonetheless, few detailed cost studies exist that apply a consistent methodological approach to the analysis of instructional technology systems. Furthermore those that do exist are quite macroscopic in nature, surveying the costs of all aspects of such a system, without closely examining any specific component. Such studies are necessary and quite useful to overall system evaluation, as well as for establishing rough guidelines for the planning of similar projects elsewhere, but they usually lack sufficient detail of particular system components to substantially improve micro level decision-making.

With particular reference to external audiences, a cost analysis without a quite detailed description of the educational resources that are employed may provide somewhat misleading guidelines for planning similar projects in other locales. Due to international cost and wage differentials it may be that the establishment of a resource configuration identical to that used in an educational project in one country, may cost substantially more or less in another country. For this reason it is as useful to specify the human and physical resource requirements as it is to specicy the costs of a particular system.

Additionally, with respect to the needs of both internal and external decision-making, it is quite useful to go beyond an examination of the human

*A listing of the acronyms used in this report is presented as Appendix A.

and physical resources needed by any particular system and their consequent monetary costs, to an analysis of the precise organizational structure in which these resources are combined. Ordinarily the principal concern of economic analysis is system efficiency (although equity considerations have received increasing attention in recent years), in the sense of obtaining maximal system output from any combination of resource inputs. In the literature concerning economic efficiency a theoretical distinction is commonly made between two types of efficiency: allocative efficiency and technical efficiency.* Allocative efficiency is concerned with purchasing the best combination of resources with a given budget. Technical efficiency recognizes that systems with identical endowments of resource inputs may combine them in very different ways and thus examines the nature of the organizational structure that yields maximum system output. In a practical sense the two concepts are quite interdependent, and it is the proper combination of allocative and technical decisions that yields an efficient system.

In this study we examine the production of educational television programs in the Ivory Coast from the perspectives detailed above. We will look at the overall structure and costs of the program production system, the organizational process by which these programs are produced, and the key issues and alternatives that affect the overall efficiency of the process. Television program production was chosen as the focal point of the study, because of intensive interest in this aspect of an ETV system in the Ivory Coast and in other nations engaging in related ventures, although similar studies of both signal transmission and reception systems seem both desirable and necessary as well. The orientation here is to provide decision-makers in countries other than the Ivory Coast with as detailed a description as possible of what ETV program production costs in the Ivory Coast

*Additional distinctions have been made in the literature. See Jamison (1976), Klees (1975), or Wells (1975) for further discussion relevant to applying these efficiency concepts to educational system analysis, as well as for more rigorous definitions of the concepts.

and exactly what kind of system is obtained for the money. Equally important is the function of providing decision-makers in the Ivory Coast and elsewhere with an examination of the key issues, problems, and alternatives, that can markedly affect the efficiency of the program production system.

The relatively long term evaluation commitment by USAID to the Ivory Coast, concentrating in large part on economic evaluation, has been pivotal in allowing a study of this nature to be undertaken, in that sufficient overall cost analysis of the Ivorian ETV project has been sponsored to allow for a more micro examination of a specific system component. To the best of our knowledge this is the first study of its kind. Some studies have been undertaken of the overall costs of ETV program production systems (see Jamison, Klees, and Wells, 1976 and Schramm, 1973 for discussions), primarily with the aim of discovering the costs/hour of production, while other studies have been undertaken that look at the organization of particular ETV program production systems, but without a specific economic orientation toward cost and efficiency. It is important to note that this is true for developed countries, such as the United States, as well as elsewhere.

In order to undertake this evaluation we have combined the effort of a specialist in the production of educational television programming with that of a specialist in the economic analysis of instructional technology systems. Such a combination is essential since an economist does not usually have sufficient knowledge of the television production process to deal with the analysis of technical efficiency considerations (or of allocative efficiency really, since the goals of the process are not amenable to exact specification), nor has the production specialist usually a sufficient economics perspective to ensure concern with system efficiency. We, the authors, have tried to learn from each other's fields of expertise, and to integrate the two perspectives into a unified analysis of the Ivorian ETV program production system.

Before proceeding further, one important caveat should be stressed. In theory, improving the efficiency of a system means getting more output for your input or, alternatively, producing the same output for less input. In practice, unfortunately, it is quite difficult to accomplish this task, even if you have a rather precise conception of the relevant output and a fairly clear specification of the production process. It is much more difficult to make improvements in system efficiency when the outputs and the production process are not easily specified, as is the case in the production of ETV programs. Furthermore, the distinction between allocative and technical efficiency considerations blurs to some extent as well, since most organizational changes entail some monetary costs. What can be examined in practice usually turn out to be tradeoffs between cost and quality. In the case of ETV program production this means that we look at various alternative physical and human resource combinations and the organizational structures in which they are embedded (including the existing pattern) and analyze their effects on various dimensions of the quality of the system output.

However, this cost-quality tradeoff conception of the analysis brings us to the center of a significant problem, namely of what value is it to improve the quality of the output? In the case of ETV program production, improved output is translated to mean 'better' programs. But what are 'better' programs? There are certainly standards among specialists in television program production as to what constitutes a better program in both a technical and an educational sense. However, relatively little research has been done examining the effects of changes in program quality on different dimensions of viewer learning. Some of the research that has been done leads to conclusions that counter conventional TV production wisdom. Schramm (1972) reports:

> The general conclusion that emerges from the studies of simple vs. complex treatments of material in the audio-visual media is one that should gladden the heart of a budget officer or an executive producer. More often than

> not, there is no learning advantage to be gained by a fancier, more complex treatment (p. 55).
>
> Visual embellishments do not usually help learning unless (like directional arrows) they can help organize content that is not inherently well organized or (like animation) help a viewer to understand a process or concept that is very hard to understand without such simplification. In other words, visual embellishments per se are not especially useful in instructional material.
>
> No learning advantage has been demonstrated for 'professional' or 'artistic' production techniques such as dollying rather than cutting, key rather than flat lighting, dissolves, wipes, fades, etc.
>
> There is very little evidence that narrative presentation ordinarily has any learning advantage over expository or that adding humor adds to learning effect (p. 65).

Furthermore, even if we were to assume that notions about improved program quality do translate into improved learning outcomes from the educator's point of view, the question still remains are these improved learning outcomes beneficial to the individual students and to the society as a whole? In cases where they lead to frustrated expectations of success, or to further societal inequalities, the normal logic of educational achievement may be brought into question.

The considerations above are important ones that can not be dealt with within the scope of this study. They are raised as a caution, and as an impetus to further research. A closer examination of operating ETV program production systems is, we feel, a quite useful undertaking, as was discussed above. But the results of a study such as this must always be examined in a larger context in which questions such as those we have just posed are raised.

C. Method

In undertaking this study we have placed heavy reliance on both reports that have been previously published about the project and interviews with key personnel involved in the management and operations of the production system. Of particular help were the planning studies done for the project, SEEPTE (1968,

Vols. I and II), and the review of past and future activities presented in SEEPTE (1973). The cost analysis of the project reported in Eicher and Orivel (1976) and Klees and Jamison (1976, 1973) were essential as were the studies of the production process reported in Dorr (1974, 1973) and ETV Production Center (1974). Invaluable aid pertaining to cost and program production data was received from the newly created project management group in Abidjan, the DOGE.

Much of the descriptive information contained in this report was acquired from interviews conducted with production personnel in the Bouake Complex and from meetings with management personnel in Abidjan. Both authors attended all "economics" or "production." This procedure, as reflected in the introduction to this report, encouraged our learning from each other and from the situations presented and helped to establish a combination of economics/production questions, the interrelationship of which being central to our micro study.

Most of the interviews were conducted in what may most appropriately be described as a semi-structured style, wherein we allowed for the expression of subjective impressions in such cases where we thought such an allowance would help elicit basic attitudes and assist in clarifying actual, not stated, procedures. On several occasions we follow-up the semi-structured interviews with a precise list of questions (usually gauged to the acquisition of factual information) generated by the initial exchange. We did not perceive ourselves as constrained to roles of interviewers where explicitly worded questions were propounded, but rather we considered that through speculation and even expressing opinions ourselves on occasion we could, and did, create a relaxed atmosphere. In this manner, dialogue ensued in which the roles of interviewer and interviewee were not significant to the central pursuit of collecting data which

were mostly personal perceptions and opinions.

We did not seek, and neither did the above described procedure allow for, our interviewing a large number of people in the Production Complex. We proceeded rather by initially talking with a few individuals who were in key positions, or with whom we had some established entree, and permitted our sample to be established by their referring us to others with whom we subsequently spoke. On most of the interview occasions we were accompanied by a young Ivorian trainee, working with the Evaluation Unit in Abidjan, who spoke English fluently and who assisted us with language difficulties and with recording information such as charts and schedules.

It must be realized that the constraints of a two person, two week mission to a radically different culture and climate place significant limitations on what is feasible to accomplish. We, the authors, realize that those individuals who are working on the ETV project have a far better grasp of the issues and problems faced in program production than we could obtain given the constraints of the mission. What we hope to offer in this report is primarily a framework for thinking about these issues and problems. This should be useful to external audiences and, hopefully, will also be of assistance to those Ivorian decision-makers who will effect project policies in the coming years.

II. ETV PROGRAM PRODUCTION

In this section we describe the system of educational television program production currently employed by the Ivory Coast. Part A discusses the general organizational structure of the system, the facilities and personnel assigned to it, and the resulting ETV programs produced by the system. Part B analyses the costs of program production and estimates alternative cost functions which approximate the behavior of system costs. Finally, Part C describes the process by which ETV programs are produced.

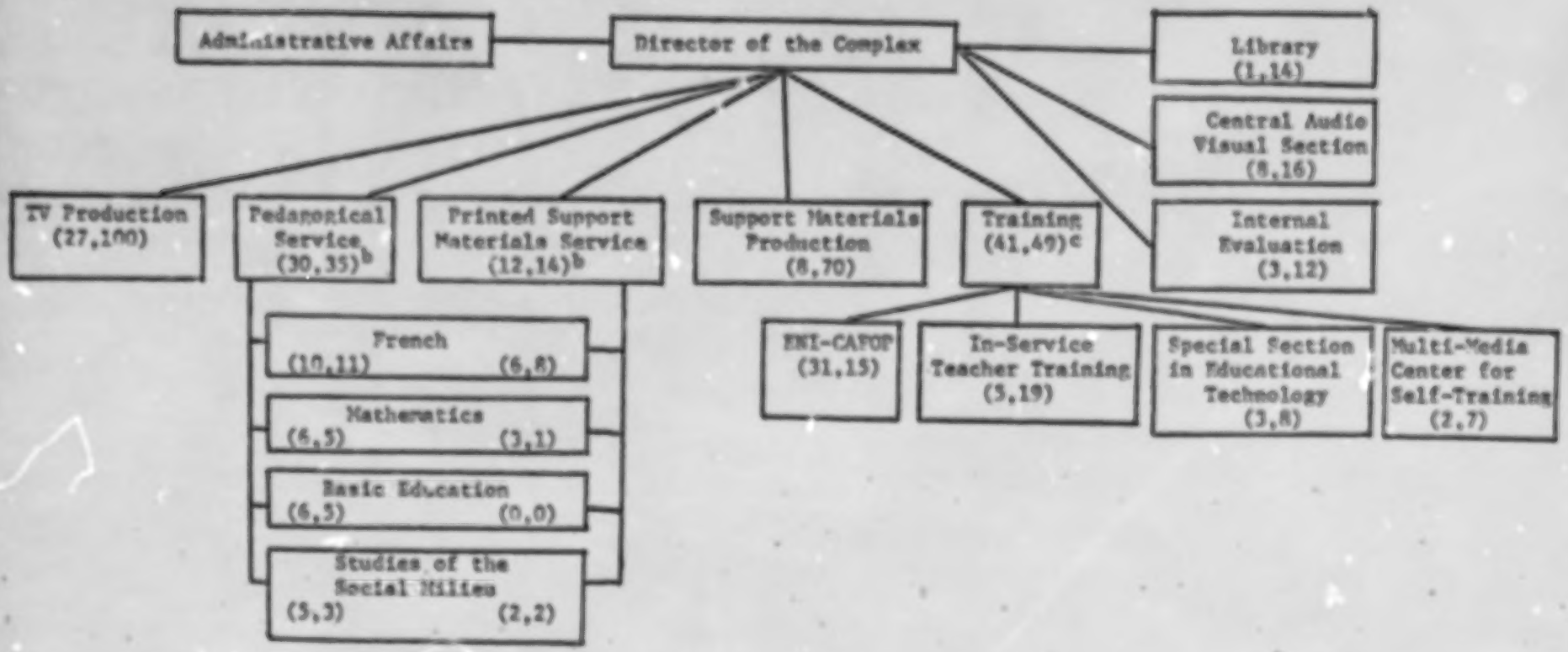
A. System Organization, Resources, and Output

The educational television production unit is presently situated in a former school complex in Bouake, the second largest city in the country, located in the center of the Ivory Coast. The construction of a new, modern ETV Complex is underway and a complete transfer to the new Complex is planned for Fall, 1977.

Figure I provides a functional overview of the ETV Complex organization. In addition to having the responsibility for the production of the television lessons, the ETV Complex is in charge of the production of printed support materials for primary school students and teachers, and operates two teacher training centers. The Normal School for Teachers (ENI) and the Center for Animation and Pedagogical Training (CAFOP, one of nine in the country) provide training for future primary school teachers, oriented specifically towards the teaching demands for an ETV based system. The Multi-Media Center for Self-Training (CDAF) and the Central Audio Visual Section (SAVC) provide direct support for teacher training, the first by making materials accessible for student teachers desiring to improve their instructional capabilities and the second by making available audio visual equipment and supplies, including a closed circuit TV system designed to support classroom instruction of future teachers.

Figure I

Functional Organization of the Educational Television Complex[a]



[a]This figure presents the primary functional groups organized at the Educational Television Complex in Bouake. The numbers in parenthesis under each subdivision indicate the number of personnel in that section during the 1975/1976 academic year--the first number in the parenthesis refers to the number of foreign technical assistants (French, Canadian, or UNESCO) while the second number refers to the number of Ivorians.

[b]These numbers include those employed in the subdivisions listed in the figure (on the left and right respectively) plus those employed in other subdivisions not listed in this figure

[c]These numbers are the total of those listed under the respective subdivisions

As a part of the educational and training responsibilities of the Complex there is a section concerned with in-service teacher training, which produces weekly instructional television lessons aimed at the primary school teacher in the classroom. Additionally, there is a Special Section in Educational Technology (SSTE) which provides training for Ivoriens working as producers and directors at the Complex.

The production of printed materials for students and teachers, designed to directly support the television lessons, is an integral part of the activities at the ETV Complex. As shown in Figure I, this support service can be broken down into two functional areas. The Support Materials Production section is in charge of the physical production of the large annual volume of student and teacher workbooks. The Printed Support Materials Service is responsible for the conception and writing of the material. It is this latter group that will be of some interest to us in this report as the organizational structure ties this service quite closely with the production of the television lessons, as is indicated in Part C below.

The production of the television lessons is accomplished by the Pedagogical Service and the TV Production section. The former has the primary responsibility for the conception of the programs and the translation of the concepts to a realizable form, while the latter is chiefly responsible for the technical translation of a script into a finished TV program. The Pedagogical Service is subdivided into the primary curriculum subject areas, as shown on Figure I, paralleled by a similar subdivision in the Printed Support Materials Service. Some of the curriculum areas are subdivided into specific aspects of that particular curriculum area. Both the formal and informal relationships between the three sections above are much more complex than indicated here, and being a central focus of our report, they will be elaborated on in Part C below.

As can be seen from a glance at the numbers in parenthesis in Figure I, the ETV complex is a reasonably large operation, employing approximately 565 persons in total during the 1975-1976 academic year. Table I gives some idea of the overall growth of the operation (excluding those departments which are only related to teacher training) in terms of the number of personnel employed by the ETV Complex since the project's inception, broken down by broad personnel categories. It can be seen that the number of foreign technical assistants has leveled off over the last three years in absolute terms, and is declining relative to the number of Ivorian personnel. This tendency is generally in keeping with the expectation that by 1980 such foreign technical assistance (chiefly from France, for TV program production, and from Canada, for printed support materials production) will be withdrawn, and that the project from then on will be operated totally by Ivorians.

Tables II and III allow us to look somewhat more closely at those personnel who are of particular interest in this study. Table II examines the growth over time of the number of TV program producers, directors, and printed support material writers working at the Complex. This does not include producers and directors assigned to in-service teacher training programs exclusively.* The number of technical assistants from France (producers and directors) has steadily increased over time, although the number of Canadian technical assistants has diminished this past year. The number of Ivorian producers and writers has increased also since inception, but the number of Ivorian directors has declined over the past two years, reflecting partially the increased number engaged in fulltime professional training in France and Belgium. Table III is included to give the reader a more precise idea of the types of personnel

*It should be noted that the Ivorian nomenclature for ETV production personnel is not easily translated. The "realsateur" comes close to the English director; the "producteur" combines the functions of a producer and a scriptwriter; the "redacteur" is the writer of support materials for the television programs.

Table I

Evolution of ETV Complex Personnel[a]

	1969	1970	1971	1972	1973	1974	1975
Ivorian Functionaries		14	44	64	115	146	179
Ivorian Day-Laborers		61	63	71	146	197	239
Foreign Technical Assistants	13	27	54	77	106	106	107
Total	13	102	161	212	367	449	525

[a]This tabulation includes all those subdivisions listed in Table I with the exception of personnel attached to the ENI, the CAFOP, the Central Audio Visual Section (SAVC), and the Multi-media Center for Self-Training (BDAF). Each year refers to the academic year beginning in that calendar year, e.g. 1969 refers to the 1969-1970 academic year. (The numbers in this table for 1975 are slightly different from those reported in Figure I, as they came from different sources--the differences probably reflect changes in personnel during the course of the 1975-1976 academic year.)

Table II

Evolution of ETV Complex Personnel-Producers, Directors, Writers[a]

	1969	1970	1971	1972	1973	1974	1975
Producers - IV		1	3	11	20	20	27
- TA	2	6	10	18	22	25	28
Directors - IV			6	9	13	9	5
- TA		3	7	6	5	5	10
Writers - IV			1	1	7	12	11
- TA			5	5	11	18	11

[a]This only includes personnel working on television programs for students. Personnel concerned with the production of in-service teacher training TV programs are not included. Each year refers to the academic year beginning in that calendar year, e.g. 1969 refers to the 1969-1970 academic year. (IV = Ivorian; TA = Foreign Technical Assistants).

Table III

Detailed Description of Personnel for Selected ETV Complex Subdivisions, 1975-1976[a]

Pedagogical Service	IV	TA
Administration	1	
Producers (French)	11	10
Producers (Math)	5	6
Producers (Social Milieu)	3(4)	5
Producers (Basic Ed)	5(2)	6
Producers (Magazine)	3(1)	1
Broadcasting	5	1
Technical Liason	2	1
Information	1	

Printed Support Materials Service	IV	TA
Administration		1
Writers (French)	8	6
Writers (Math)	1	3
Writers (Social Milieu)	2	2
Clerical	3	1

TV Production	IV	TA
Administration	6(1)	1
Directors	5(4)	10
Video Operators	5(1)	
Cameramen	9(1)	2
Sound men	13	3
Control Room	4	1
Telecine	6	
Maintenance	7	3
Lighting	6	1
Photographers	3	1
Film Lab	10	1
Film Editors	2(5)	1
Animation	2(1)	1
Carpentry	8	
Machinists	3	
Make-up	2	
Sets	6(1)	1
Graphists	4	4
Painters	2	
Misc.	5	

Support Materials Production	IV	TA
Administration	1(3)	3
Graphists	8	4
Photo Editors	9	1
Press	7	1
Binding	9	1
Distribution	9	
Composition	4	1
Warehouse	2	
Carpenters	2	
Maintenance	4	
Misc.	13	

[a]Numbers in parenthesis indicate the number of Ivorians who are assigned to the task listed but who are currently participating in fulltime training in their field of specialization. (IV = Ivorians; TA = Foreign Assistants).

employed in four of the ETV complex subdivisions during the 1975-1976 academic year.

The physical resources that have been installed for the production of television programs are more technically sophisticated than those of many ETV operations in the United States. There are five studios and four control rooms (studios A and B share a control room), all thoroughly equipped for the production of black and white TV programs. Studios A (9.8m x 9m), B (9.8m x 9m), and C (14m x 11m) are each equipped with three rather unique "dual system" cameras. These cameras, manufactured by Thompson, have the capability of shooting for either film or videotape. Studios A and B both have telecine systems, and all three of the studios above and their control rooms have substantial accoutrements--sophisticated mixing devices (split screen, electronic and chrome key matting, flexitron effects), excellent lighting, -- capable of making programs of relatively high technical quality. Studio D is much smaller than the other three (6m x 6m), and is equipped for only videotape production. Because of its size it is not as frequently used, although it is excellent for the taping of marionette sequences. Studio E, a former viewing room, is used expressly for sound recording and synchronization.

Additionally, there is a unit equipped for the production of animated sequences, and film equipment sufficient for three fulltime teams to accomplish the extensive shooting on location near Bouake that the production schedule sometimes demands. In support of the film production there are three completely equipped editing tables and two photo labs for film development and printing.

The plans made by the Ivory Coast to utilize the extensive physical and human resources marshalled for the ETV project effort were quite ambitious. The Ivorian school system operates essentially on a five day week, Monday through Friday from 8-12 and 3-5:30 (except for Thursday afternoon) and Saturday morning from 8-12. The school year officially extends from September 15th to

June 30th, but with vacations, it amounts to about 33 weeks. (This may be an overestimate, since many teachers proctor official exams in June and many classes are therefore effectively cancelled). Planning documents (SEEPTE, 1968) projected broadcasts to students of about one hour per day per grade initially, accelerating to 1.17 hours per day per grade (35 hours of programming per week) by the time the six grades were completely covered. Programs were scheduled to be revised over the years following their completion, beginning with 40% revisions in the second year and decreasing gradually to 15% by the seventh year and 15% every year thereafter.

A more recent document (SEEPTE, 1973) examined the extent of production and transmission during the first three years of the project and revised somewhat the overly ambitious plans made in the early project stages. It hypothesized about 135 hours of student-directed programs per grade per year (instead of the 165 or 193 hours planned for above) for each new grade added, in addition to revisions of previous programming at the rate of about 60% over the two-year period following the production of programs for each new grade level covered.

This same document tried to look more realistically at the capabilities of available personnel and facilities in meeting these production goals. It was estimated that in one 8-hour work day a studio team could produce 20 minutes of programming (programs for students are 10 minutes or less in length), an outside film team 10 minutes, and an animation unit 5 minutes. Given a 45-week work year for complex personnel, the document reports that a studio could produce 75 hours of programming a year (assuming a half day for maintenance each week), an outside film team about 40 hours, and an animation unit about 20 hours. With three studios and three outside film teams, it was felt that the capacity for film and video shooting was quite sufficient to meet the production goals established. This amounted to 315 hours for the 1975-1976 school year, consisting of 225 hours of program directed to students, 70 hours of programs

directed towards teachers, and 20 hours of experimental programming. An additional animation unit was, however, felt to be necessary to facilitate the programming. Also investigated was the capacity of editing, developing, and printing facilities to keep pace with the production schedule. It was felt that three editing tables would not be sufficient for the planned volume of film production, and that two more such facilities would need to be added.

In practice, as is common in the initiation of an ETV program, actual broadcast and production hours have fallen considerably behind those that were projected. Table IV gives a detailed look at the number of hours broadcast during the first four years of the project.* The primary subject areas are French (subdivided into reading, vocabulary, spoken language, written language, and grammar), mathematics, basic education (oriented towards basic modes of individual expression, such as art, music, and body movements), and studies of the social milieu (which has a broad charge to inform and motivate children in relationship to various aspects of the physical, social, scientific, intellectual, cultural, and moral environment). As French is not the mother tongue of almost all Ivorian children, that subject receives the most emphasis, especially in the early grades. Studies of the social milieu receive increasing emphasis in the later grades. There has been a number of attempts to establish innovative programming. For example, for CE1 and CE2 there is a serial type story that aims at putting the students in a socio-cultural milieu to which they can relate and which allows for the development of a number of cross-disciplinary educational messages. There is also a student "magazine" show ("magazine des elèves") for grades CE1, CE2, CM1 and CM2, in which students are filmed talking about various topics in a kind of student exchange format.

There are two types of programs oriented directly towards primary

*The Ivorian labels for grade levels are used throughout: grades 1-6 correspond to CP1, CP2, CE1, CE2, CM1, and CM2 respectively.

Table IV

Annual ETV Broadcasts by Grade Level and Subject Matter[a]
(in number of hours)

	1971-1972					1972-1973					1973-1974					1974-1975				
	T	F	L	V	E	T	F	L	V	E	T	F	L	V	E	T	F	L	V	E
CP1 - TOTAL	119	90	23		6	91	77	13		1	93	80	13			95	76	14	5	
French	78	57	21			37	37				36	36								
Read/Write	15	13	1			2	2				6	6								
Basic	8	7	1			20	20				20	20								
Math	13	13				18	18				18	18								
CP2 - TOTAL						93	82	13			87	60	14	2	2	86	67	14	5	
French						46	46				33	33								
Read/Write						6	6				8	8								
Basic						20	20				19	19								
Math						10	10				11	9		2						
CP1 - TOTAL											80	60	14	6		73	51	15	7	
French											19	19								
Read/Write											10	10								
Basic											9	8		1						
Math											10	9		1						
Serial											5	5								
Magazine											4	1		3						
Social Milieu											9	8		1						
CP2 - TOTAL																58	10	11	37	
Grammar																4			4	
Oral Structure																2			2	
Math																8			8	
Basic																11	3		8	
Social Milieu																10	2		8	
Serial																3	3			

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Table IV (Cont.)

	1971-1972					1972-1973					1973-1974					1974-1975				
	T	F	L	V	E	T	F	L	V	E	T	F	L	V	E	T	F	L	V	E
Magazine																				
Poetry																				
Motivation/Expression																4			4	
																2	1		1	
Teacher Journal - TOTAL	27	3	24			39	12	27			32	15	17			3	1		2	
CP1	25	3	22			17	5	12			10	5	5			35	1	17	17	
CP2						22	7	15			11	5	6			11	1	5	5	
CP1/CP2											11	5	6			11		5	6	
																13		7	6	
Teacher Training	24	7	14	3		31	15	1	15		28	1	27			0				
Directors Workshop	26	5	21			43		43			25	8	17			50		10	40	
TOTAL	192	105	78	3	6	299	174	82	42	1	345	209	65	69	2	327	205	81	111	

[a]In the columns the symbols are as follows: T = total hours; F = hours of film; L = hours of live broadcast; V = hours of videotape; E = hours of film supplied from external sources. In cases where breakdown by subject matter is unavailable, only total hours are reported.

school teachers. The journal for teachers ("journal des maitres") consists of three 15-minute programs per week, broadcast at the end of the school day, providing announcements and updates relevant to the student TV programs, as well as devoting time occasionally to deal with special problems or questions received from teachers in the field. There is also a weekly two hour presentation on Thursday mornings (consequently, students have no classes at this time) directed toward in-service teacher training. During the first three years of the project these programs were mainly modeled on the types of pedagogical courses offered by the formal teacher training institutions, although some time was devoted to specific discussions of ETV reform issues. The heavy emphasis on formal pedagogical training, however, appeared more and more inappropriate to the pressing needs of the classroom teachers and during the 1974-1975 school year all in-service training broadcasts were discontinued in order to study and formalize a more relevant approach. This year the broadcasts were resumed with a greater stress on problems and issues directly related to ETV classroom teaching. Teachers often appear on the programs in roundtable discussions of specific issues while their colleagues in the classrooms are encouraged to discuss and evaluate these issues themselves and to report back to the complex on their deliberations, suggestions, and questions. Finally, there are also programs prepared for workshops for school directors, administrators, and new ETV teachers that are held each year in August and September at the ETV Complex in Bouake.

From Table IV we can see that the actual number of hours of programming broadcast to students fell below even the more conservative 135 hours/grade/year plan, although teacher programming has been relatively on target. Table IV also highlights the heavy reliance on film production in the early years of the project, with videotaping becoming of increasing importance in more recent years. One can also observe the minimal use of externally prepared programs,

reflecting the Ivory Coast's desire to produce programs directly relevant to Ivorian needs and environment.

It is a more difficult matter to get an accurate estimate of how many programs are produced each year. Table V presents the best estimates available for the first five years of the project. The main observation to make from these data are that significantly fewer programs were initially produced for each grade, and fewer subsequent revisions made, than was planned.

B. System Costs

In the previous section we have examined the organizational structure, the physical and human resources utilized, and the output of the Ivorian ETV program production system. In this section we estimate the costs of producing this television programming. This part of the report is somewhat lengthier than others, since we make an attempt to provide in more detail than usual the underlying reasoning and assumptions on which our cost analysis is based.

The most complete analysis of the Ivory Coast program production costs to date was undertaken by one of the authors, in conjunction with Dr. Dean Jamison, as a part of a study of the total costs of the ETV system and is reported in Klees and Jamison (1973). Table II.2 of their report, which looks exclusively at the costs of ETV program production, is reproduced here as Table VI.* The table presents a reasonably accurate reflection of historical costs through 1973 and after that year relies on the cost projection assumptions detailed in the table footnotes.

Part of the purpose of this report was to up-date the program production system cost estimates made by Klees and Jamison (1973). Unfortunately it was

*The cost figures in Table VI have been converted from 1972 to 1975 CFA francs. Additionally, the costs of personnel devoted to in-service teacher training programs are included as a part of the ETV program production system, whereas they were excluded in the original Klees and Jamison report. Finally, costs were rounded to the nearest million CFA francs.

Table V

Annual Production of ETV Programs[a]
(in number of hours)

	1971	1972	1973	1974	1975
CP1	113	35	5	7	2
CP2		95	6	2	12
CE1			80	4	2
CE2				58	10
CM1					90
Teachers' Journal	23	39	32	35	35
Teacher Training	24	31	28	0	20
Directors Workshop	26	43	25	30	30
Total	186	243	176	136	201

[a]Estimates of the number of hours of program revisions produced each year by grade level were made available by the DOCE. The assumption was made that all programs directed toward teachers and school directors were re-created each year. Each year refers to the academic year which begins in the given calendar year (e.g., 1971 refers to the 1971-1972 school year).

TABLE VI

Costs of ITV Program Production
(millions of 1975 CFA francs)

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	199
Administrative Personnel[a]																							
Ivorian		4	4	3	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	5	5	5
Foreign				4	8	8	8	8	8	8	8	8											
Foreign Lodging				2	3	3	3	3	3	3	3	3											
Operations																							
Personnel:[b]																							
Ivorian		23	48	56	33	39	64	66	78	103	101	102	102	102	102	102	102	102	102	102	102	102	102
Foreign		36	177	252	274	309	332	327	272	230	106												
Foreign Lodging		23	47	70	78	86	93	91	76	64	30												
Expenses[c]		34	85	133	141	155	170	108	90	79	72	69	63	63	63	63	63	63	63	63	63	63	63
Buildings Construction[d]	44	36	13	61	12																		
Equipment[e]		39	214	144	285							39	214	144								39	214
Maintenance[f]																							
Personnel:[g]																							
Ivorian					3	3	3	3	3	3	8	8	8	8	8	8	8	8	8	8	8	8	1
Foreign					30	30	30	30	30	30	30												
Foreign Lodging					3	3	3	3	3	3	3												
Expenses[h]					37	39	46	50	37	63	69	78	89	31	34	38	39	31	35	38	42	44	39
Total Costs	44	237	388	725	907	703	760	697	628	596	438	312	414	345	304	306	309	211	213	218	222	263	414

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[illegible] 00 [illegible]

Footnotes to Table VI

[a]The source of administrative costs for the ETV project through 1973 is SINCRO (1972, Vol. III), which, in this case, only indicated costs for the ETV complex as a whole, thus including the costs of the ENI and CAFOP teacher training centers. It was assumed that 45% of these total costs should be allocated to the ETV project, the 45% figure being derived from an analysis of the relative size of 1973 budget items for ENI, CAFOP and ETV production. Foreign administrative aid personnel are assumed to withdraw in 1980 (one year after the withdrawal of foreign technical assistance). Due to this withdrawal, the Ivorian personnel costs are assumed to increase by 1/3 in 1980. No estimate was available for recurrent administrative expenses, however, much of this is probably include in the budget for operations expenses given below.

[b]Operations personnel costs are based on SINCRO (1972, Vol. III) and SEEPTE (1968, Vol I). Salary costs are assumed to remain at their 1972 level, in real terms (except for Ivorian personnel for 1975-1980 where a 2% per year increase is assumed to cover the cost of better qualified personnel prior to the withdrawal of foreign aid), and the number of personnel assigned to each year is 90% of the planning figures given in SEEPTE (1980, Vol. I), (10% are assumed to work on in-service teacher training). Foreign technical assistance is assumed to end in 1979. Maintenance personnel are included here through 1972, and listed seperately below for 1973 and beyond.

[c]Through 1973 operating expenses are assumed to equal 90% of the operations budget (10% goes towards salary expenses above). After 1973 changes in expenses are assumed proportional to changes in the number of hours to be produced annually as estimated in SEEPTE (1968, Vol I).

[d]The cost of buildings construction (administrative, studios, etc.) is from the SINCRO (1972, Vol III) and is assumed to have a twenty-five-year life. The costs of building and equipment reported here differ somewhat from those reported for 1969-1973 in Eicher and Orivel (1976) due to discrepancies between original sources; however total expenditures in these categories over the five year period are almost identical in both sources.

[e]The cost of studio and other production equipment is from SINCRO (1972, Vol III). Production equipment is assumed to have a ten-year life. However, by 1980, due to the planned reduction in program output (about 15% of programs for each grade level being re-taped annually) there should be a need for only two studios. Therefore, the 1973 expenditures for equipping the third and fourth studios are assumed not to be replaced. It is possible that the studios could be re-equipped for other production purposes (e.g. secondary school or out-of-school program production) but then costs should not be allocated to this particular project. The 30.3 million CFA francs expenditure in 1971 is to equip a studio-school (at Ivorian Radio-Telvision) used to assist in the training of Ivorian production personnel. Other costs for the training school were not available. The costs of building and equipment reported here differ somewhat from those reported for 1969-1973 in Eicher and Orivel (1976) due to discrepancies between original sources; however total expenditures in these categories over the five year period are almost identical in both sources.

[f] The costs of Ivorian maintenance personnel are assumed to increase by 100% in 1978 and 50% in 1979 to make up for foreign personnel withdrawal in 1979.

[g] Production equipment maintenance costs for 1973-1976 are estimated in SEEPTE (1973).

[h] Maintenance expenses (spare parts for repairs mainly) are assumed to increase at 10% per year after 1976. After 1980 they fall to their approximate early 1970's level due to the replacement of studio equipment (this is repeated again after 1990).

not until quite recently that the Ivorian ETV project initiated a centralized management information system (under the auspices of the DOGE), and a comprehensive cost record-keeping system is just beginning to be built. Nonetheless, through the cooperation of personnel at the DOGE and at the Complex, it was possible to make better estimates of costs incurred since 1973.

Table VII presents an estimation of the recurrent costs of ETV program production in 1975. It includes the personnel and operating expenses of those divisions of the ETV Complex directly responsible for the production of student and classroom teacher emissions--the TV Production section, the Pedagogical Service, and the In-Service Teacher Training section--as well as the portion of the administrative expenses of the Complex attributable to this task. The basis for the cost figures presented are detailed in the footnotes to the table. We can compare the figures in Table VII with those estimated for 1975 by Klees and Jamison (1973), as given in Table VI (the cost of operations in Table VII includes maintenance expenses, which are broken out separately in Table VI). We can see that the earlier report underestimated the costs of administration and Ivorian operations personnel and overestimated the costs of foreign technical assistance. The total costs for 1975 calculated by Klees and Jamison reflect an overestimate of 45% of those detailed in Table VI. However, much of this total cost difference could be accounted for by the inflation rate of 30% over the 1972 to 1975 year period. Klees and Jamison made the assumption that post-1973 expenses would keep pace with the rate of inflation, and to the extent that they did not, this may be a major source of the discrepancy in total costs.

In terms of capital investment costs, those given by Klees and Jamison suffice as there has been little additional capital investment since 1973. The only additional substantive correction is that Klees and Jamison did not include the costs of the construction of the two studios that were added in

Table VII

Recurrent Costs of ETV Program Production - 1975
(in millions of 1975 CFA francs)

Operations [a]	Cost
Personnel:	
Ivorian [b]	100
Foreign [c]	186
Foreign Lodging [d]	62
Expenses [e]	190
Administration [f]	
Total Recurrent Costs	637

[a] Operations costs include those incurred by TV Production, the Pedagogical Service and In-Service Teacher Training at the ETV Complex.

[b] Ivorian personnel refer to those employed in Ivorian government civil service categories. There were approximately 100 employees of this type with an average annual salary of about 1 million CFA francs (based on estimations in SEEPTE, 1968, Vols. I and II, and on conversations with management personnel in this year).

[c] There were 62 French Technical Assistants employed in ETV program production in 1975. Based on estimates in SEEPTE (1968, Vol. II) it is assumed that 46% are engaged in their military service. For military service personnel the assumed annual salary is 1,500,000 CFA francs, and for other French TA's is 4,000,000 CFA francs. Salary figures are estimated to include the costs of travel to and from France that is covered by the Ivorian government (based on estimates in SEEPTE (1968, Vol. II) and on conversations with management personnel in this year).

[d] The lodging of foreign technical assistants, which is paid for by the Ivorian government, is assumed to be 1 million CFA francs annually.

[e] Production operations expenses include the cost of materials and the wages paid to the approximately 60 Ivorian day-workers employed in this endeavor. The cost figure was taken from a report by the Ministry of Education (1976).

[f] The cost of ETV Complex administration allocated to television program production was based on the total costs of administration given in Ministry of Education (1976). This total cost figure was divided among television production, printed materials support production, and teacher training by the percentage of operation costs each of these areas entail, as explained in detail in Eicher and Orivel (1976).

1973, which increases construction expenses for that year by 57 million 1975 CFA francs. Klees and Jamison (1973) also estimated the costs of the new ETV Complex, based on planning estimates made by the World Bank in 1969, at 1298 million 1975 CFA francs, of which 50% could be assigned to ETV production and 50% to the cost of housing the ENI and CAFOP teacher training institutions. At that time plans called for completion of construction by 1975. As it turns out this cost figure was a substantial underestimate of actual costs and, in addition, the new complex will probably not be ready for occupation by the ETV production system until 1977. Recent estimates place the cost of the new Complex at 1800 million 1975 CFA francs, again half of which may be attributed to program production. This does not include the costs of equipping the television studios at the new Complex.

It was previously assumed that TV production equipment would be transferred from the old Complex to the new Complex. However, the costs of the transfer (including the possibility of substantial damage to delicate equipment, especially given the hot climate) and considerations of alternative uses for the old studios have led to the recent decision to newly equip one new Complex studio in 1977 and one in 1978. The choice of whether to equip these studios for color or black and white production has not yet been made. The costs of equipping one black and white studio has been estimated at 80 million CFA francs, while the costs of equipping a studio for color production would be 600 million CFA francs. Given this enormous cost differential, the present inability of most of the Ivorian transmission network to handle color production, and the extant research showing no significant differences in cognitive learning effectiveness between black and white and color programs (see Schramm (1972) and Chu and Schramm (1967)), the most sensible decision, from the authors' perspective, would be to opt for continuing with black and white production.

Returning now to the overall question of ETV program production system

costs, it is often more useful to think of costs as functions rather than numbers.* That is, the costs of any given system can be thought of as some function of those primary variables that influence system costs (for extensive discussion and examples of this approach to cost analysis applied to instructional technology systems see Jamison, Klees, and Wells (1976)). In the case of ETV program production we might conceive of system costs as a function of the number of hours of programming produced annually. In the case of the Ivory Coast, based on Tables V and VII which gave the number of hours of programming produced in 1975 as 201 and the recurrent cost in that year as 606 million CFA francs, we find that the cost per hour of programming produced was 3.01 million CFA francs. In mathematical form we may say that the annual cost of ETV program production, C_p, can be represented by

$$C_p = 3.01 \text{ million CFA francs} \times h, \qquad (1)$$

where h = the number of hours of programming produced. It must be emphasized that this linear equation formulation of the production cost function is only a very rough approximation that holds for a restricted range of h only; actually, the function is probably non-linear and depends on more variables than h. Nonetheless, we use this formulation here and throughout the rest of this paper as the best approximation possible given data and knowledge limitations.

There are a number of refinements that need to be made to this rather crude estimation to make it more useful. First, we note that there is a substantial salary differential between foreigners and Ivorians who perform the same function—for example, an Ivorian producer earns about 1.5 million CFA francs annually while a French producer would earn, including housing and travel allowances, about 5 million CFA francs annually. It could be argued

*The approach taken to cost function estimation for the Ivorian ETV production system is more detailed and slightly different than the one presented in Klees and Jamison (1976); the resulting figures will be substantially different, however, since Klees and Jamison used hours of programming broadcast, not hours produced.

that such a differential represents differences in capabilities (and such would be true if the world behaved according to the theoretical dictates of a perfectly competitive economic system. In actuality, however, a large part of that salary difference more likely reflects the differences in wealth and standard of living between a developed and a developing nation. This issue is important since we would like our cost analysis to be a guide for other countries that undertake such projects without substantial use of foreign human resources, as well as a guide for the Ivory Coast in future years after foreign technical assistance is ended.

To take account of such considerations we need to engage in some speculation. Let us assume that in 1980, after foreign technical assistance is supposed to be withdrawn, the Ivorian ETV project again produces 201 hours of programming. To do so let us assume that the following is true: (a) in place of the 62 French technical assistants are 62 qualified Ivorians, yielding a total of 156 Ivorian functionaries employed; (b) that such skilled Ivorian technicians receive an average annual salary of 1.25 million CFA frans instead of the 1 million CFA frans currently received. (Note, all costs are in 1975 CFA francs and to make the cost projections applicable to future years we must assume that all prices and wages just keep pace with inflation); and (c) all other costs remain the same (in 1975 CFA francs) as given on Table VII. If such is the case total recurrent expenses would equal 492 million CFA francs. yielding

$$C_p = 2{,}45 \text{ million CFA francs} \times h; \qquad (2)$$

that is, an annual cost per hour of programming produced equal to 2.45 million CFA francs.

Secondly, we need to observe that both equations (1) and (2) above represent the costs of TV production <u>given</u> a certain fixed facility and equipment capacity. If facilities and equipment are already utilized at their capacity <u>or</u> if we want to examine the average historical cost of ETV program production in the Ivory Coast <u>or</u> if we want to utilize this cost function for other nations for

which the costs of facilities and equipment can be thought of as also varying with the numbers of hours intended to be produced annually, we must make additional modifications of our cost function.

To take account of the above, we must include in our cost function the costs of the facilities and equipment utilized by the Ivory Coast, in an annualized form. Annualization of a capital expense is a means of finding the proper annual equivalent cost that takes account of the lifetime of the equipment and the social value of tying up capital to the particular country involved (see Jamison, Klees, and Wells, 1976, Chapter I for more details). Given the complexities of the Ivorian situation, with a new ETV Complex being built and an older one in use, some simplifications are again necessary. Let us assume that the cost of production facilities is that presented in the text above for the new Complex, while the costs of equipment are those given in Table VI for the old Complex.* Thus the cost of facilities are estimated at 900 million CFA francs while the costs of equipment are estimated at 662 million CFA (the simple sum of the equipment cost figures in Table VI). Assuming a 25 year lifetime for the former, a 10 year lifetime for the latter, and a 7.5% social discount rate for the worth of capital investment, the annualized cost of facilities is 81 million CFA francs and of equipment is 97 million CFA francs.

The above estimations, combined with equation 2, can yield a cost function of the following sort:

$$C_{pA} = 178 + 2.45\ h, \qquad (3)$$

where C_{pA} = the total annualized cost of ETV program production. Equation (3)

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*This assumption is not as arbitrary as it may appear for several reasons. From the Ivorian perspective, the cost of the new Complex should definitely be included, and the costs of facility improvements listed under "Buildings Construction" on Table VI (the original costs of land and construction for the present Complex are not included in Table VI since they are unavailable) may be recovered to the extent that the present Complex has alternative uses when the ETV center abandons it. Further, the costs of fully equipping the new Complex are not known and thus the equipment costs of the old complex may serve as a proxy. Finally, from an international perspective, we would expect most large scale projects to remain in one complex, and therefore the cost function should not include the costs of two such facilities.

is a representation of the costs of ETV to the Ivory Coast, where h, the number of program hours produced, is constrained to be below the production capacity that the 178 million CFA franc investment in facility and equipment can accomodate. This equation indicates that the annualized cost of producing 201 hours of programming in any given year is 670 million CFA francs, yielding an average cost per hour of programming produced of 3.34 million CFA francs.

From a longer run perspective, and also from the point of view of other nations interested in initiating a similar ETV system, it is reasonable to assume that the costs of facilities and equipment are not fixed, but are also variable with the number of hours of programming produced annually. To derive a new cost function that takes this assumption into consideration requires estimating the production capacity of the Ivorian facilities and equipment. In SEEPTE (1973) there is an estimation of this capacity as follows: (a) one studio can produce 75 hours of programming per year, therefore three fully utilized studios can produce 225 hours; (b) one outdoor film team, properly equipped, can produce 40 hours annually, therefore the three teams that the Ivorians have should be able to produce 120 hours; and (c) one equipped animation team can produce 20 hours annually. Thus, this report estimates an annual production capacity of 365 hours of programming.

Given that 1975 production is only 201 hours, either the system is only producing at 60% capacity or the above estimate is rather high. The whole question of production capacity, given a fixed amount of physical resources, relates closely to the question of efficiency raised in Section I. If we were to believe that the true production capacity of Ivorian facilities is 365 hours of programming annually, then the production of only 201 hours may be indicative of some sort of inefficiency. For example, it may be that the project has not made wise personnel hiring decisions and thus has allocated its budget for human resources inefficiently from the standpoint of maximum program output. Or, it may be that the project

employed the correct mix of human resources (i.e., is allocatively efficient in this regard), but organized them in such a way as not to take full advantage of their capabilities--a form of technical inefficiency. Or, again, it may simply be that the 365 hour capacity estimate is a poor one. It could also be, of course, that for various reasons you may want to produce less than capacity--in this instance, such an explanation is probably inappropriate given that planned production for the year was 315 hours of programming. Most likely all three of the above explanations have some reality base, and in Parts A and B of Section III we look at organization and training considerations that will shed more light on this question.

Returning now to our question of how to transform equation (3) to reflect the long run variability of the fixed costs (178 million CFA francs) with the number of hours of programming produced, let us assume that 365 hours is an accurate measure of facility and equipment capacity. The total annual cost under full capacity production is then:

$$178 + (2.45 \times 365),$$

and the average cost per hour is calculated as:

$$178/365 + 2.45 = 2.94.$$

Assuming that the same average cost is achieved for different sizes of the ETV production facility when the latter is used at capacity, the long run cost function can be approximated by:

$$C_{pa} = 2.94\ h. \quad * \qquad (4)$$

To some extent a measure of the inefficiency of producing 201 hours instead of 365 (assuming such is not desired) is the discrepancy between the actual average costs of producing 201 hours, calculated from equation (3) to be 3.34 million CFA francs, and that calculated above of 2.94 million CFA francs from equation (4), representing a system operating at capacity.

*It is clear that investment in ETV production capabilities is lumpy, like most real world investments, in the sense that you need a certain physical resource capacity just to start production, and the marginal cost of expansion beyond initial capacity is probably not the same as the long run average cost. Nonetheless, the linear function above can be thought of as a reasonable approximation to the actual step function.

A final modification of our cost equation is brought about by the consideration that the on-the-job expertise brought by the foreign technical assistants employed by the Ivorian project has not really been accounted for above. We made an initial estimation of equation (2) assuming the French had already left the project, as is planned for 1980. As of that year, there will have been ten years of what we might think of as foreign human capital investment in the project and the costs of such expertise and training need to be annualized over the project lifetime and incorporated into our cost function, both from the perspective of giving an accurate long run picture of total costs to the Ivory Coast, as well as from an international viewpoint, in the sense that other countries may need similar foreign expertise, at least to some extent.

As a rough approximation, let us first calculate the total sum of foreign technical assistance in the form of human resources that will have been brought to the Ivory Coast by 1980. Let us assume that the figures calculated by Klees and Jamison (1973), given in Table VI, for the cost of foreign personnel and lodging for production operations and maintenance is accurate through 1973. After 1973, we assume that true foreign human resource costs are 53% of those given in Table VI (based on a comparison of those given in Table VII for 1975 with those given in Table VI for 1975). Such assumptions yield a total foreign expertise cost of 2170 million CFA francs over the 1970-1979 period. To simplify, if we consider this to be a human capital investment occurring at the midpoint of the first 10 years of a project with a 25 year lifetime, we can amortize this investment over a 20 year lifetime at a 7.5% social rate of discount, yielding an annual equivalent cost of 213 million CFA francs. Again, as in the case of physical facilities and equipment, we may consider this as a fixed cost, or, over the longer run, more probably, as a function of the number of hours of annual system production capacity. That is, the cost of foreign technical assistance may be posited to be 213/365 (=.58) million CFA

francs per hour of production capacity. Thus,

$$C_{pA} = .58\ h + 2.94\ h, \text{ or}$$

$$C_{pA} = 3.52\ h. \qquad (5)$$

That is, our final approximation to the long run average annualized cost per hour of ETV program production is 3.52 million CFA francs. This is our best estimate of what the overall experience of the Ivory Coast's ETV project will reflect. Whether equation (5) or equation (4) is more suitable for other nations planning a similar project depends on the extent to which foreign, relatively highly paid, expertise is necessary to project success.

We now need to examine briefly our final cost equations from a slightly different perspective. Equation (5) says, in effect, that the average annualized long run cost of producing an hour of Ivorian ETV programming is 3.52 million CFA francs. However, it must be realized that an hour of ETV programming may have a lifetime of more than one year. Therefore, we may think of this 3.52 million CFA franc cost as an annualized estimate of a capital investment, that is, an investment in a good or service whose useful life is spread over some decided upon lifetime. Equations (1) through (5) represent attempts to approximate the total costs of the production of ETV programming in any given year; however, to take account of the utilization of the programming produced, we must annualize this cost over its intended lifetime. From the SEEPTE (1973) document we may infer that the average lifetime of a program is planned to be about 4 years (the history of remakes in the Ivory Coast, as set out in Table V, indicates a longer lifetime, but plans project more effort devoted to program revisions in the near future). Again assuming a 7.5% social rate of discount, the annualized value of 3.52 million CFA francs over a 4 year lifetime is 1.05 million CFA francs. This latter figure represents our best estimate of the annualized cost of one hour of ETV programming, taking into account its intended

utilization.

Finally, we must remember that the cost analysis represented by equations (4) and (5) above assume that the annual production capacity of the Ivorian ETV system is 365 hours, and the average cost figures reported above thus assume that 365 hours of programming are produced annually. If the true production capacity were actually only 201 hours, the amount of programming produced in 1975, then average costs would consequently be higher. Instead of the 3.52 million CFA franc figure reported above, given a capacity of only 201 hours the long run average annualized cost per hour of ETV program production would be 4.40 million CFA francs. Taking into account the hypothesized four year program life, under these circumstances the cost per hour would be 1.42 million CFA francs, not 1.05.

The possibilities for unit cost reduction are possibly greater than indicated in the above efficiency comparison. In the development of equations (1) to (5) above we assumed that it is the capacity of the production facilities and equipment that is in question, but that personnel and operation expenses would be increased proportionally from their 1975 level if more programs were to be produced. If the existing number of personnel could actually produce 365 hours of programming instead of 201 hours (a "pure" case of technical inefficiency, that is, physical and human resources could be reorganized to produce more output without any cost increase) then long run average costs would be lower than reported above. Instead of 3.52 million CFA francs, the long run average annualized cost per hour of ETV program production would be 2.42 million CFA francs. Taking into account the hypothesized four year program life, the cost per hour would be .72 million CFA francs, not 1.05. Thus we see that efficiency improvements, if possible, can yield substantial reducations in unit (and total) cost or, alternatively, substantial increments in output. Possible causes of such inefficiencies will be discussed in Section III.

Before concluding, we must remark upon the general approach taken above to cost function analysis. The representation of ETV program production costs as solely a function of the number of hours produced is an oversimplification. Six ten minute programs will generally cost more than a one hour program; costs will vary by subject matter and grade level; programs shot on film outdoors will have a different cost than videotaping programs in a studio; differences in technical quality, in the use of special effects, and in the presentation format all will cause cost differences. If more detailed cost information were available, more complete and accurate cost functions based on criteria such as these could be generated. This is especially important to projects just being planned, and other nations interested in initiating an ETV project would do well to gather as much detailed cost information as possible from which to construct program cost functions.

To put the Ivorian cost experience into perspective, it is useful to conclude with some international comparisons. Jamison, Klees, and Wells (1976) analyze ITV program production costs for six projects and their results are reproduced in Table VIII, along with the costs of the Ivorian experience under three different assumptions: (a) that the existing facilities, equipment, and personnel can and do produce 201 hours of programming annually; (b) that the existing facilities can produce 365 hours and that proportionally more personnel than are presently available are added so that 365 hours are annually produced in future years; and (c) that the existing facilities, equipment, and personnel can and henceforth do produce 365 hours of programming annually. Case (a) essentially represents the situation that presently exists, while cases (b) and (c) posit efficiency improvements. The costs of the Ivorian system were converted to 1972 U.S. dollars in order to be comparable with those reported by Jamison, Klees, and Wells.

From Table VIII we can see that the Ivorian ETV production system, as it is

Table VIII

An International Comparison of ITV Program Production Costs[a]

	Number of Programming Hours[b]	Annualized Facility Costs[c] (in 1000s of 1972 $)	Annualized Equipment Costs[d] (in 1000s of 1972 $)	Recurrent Costs (in 1000s of 1972 dollars)	Average Cost per hour[e] (in 1972 dollars)
Ivory Coast[f]					
a. if total capacity = 201		252.3	302.1	1532.3	13700
b. if facility capacity = 365		252.3	302.1	2784.3	10800
c. if total capacity = 365		252.3	302.1	1532.3	7500
El Salvador	333	22.70	231.0	540.0	3000
Hagerstown	1440	40.13	209.9	847.5	762
Korea					1704
Stamford	6290	47.25	34.06	489.9	91
Telesecundaria	1080	12.6	44.3	472.8	490
Open University	288				9600

[a]This table is taken from Jamison, Klees, and Wells (1976, Table IV.2)

[b]This is the number of hours produced or revised in a year. It is not necessarily equal to the number of total hours broadcast to students.

[c]Facility costs are annualized at 7.5% with a 20-year life.

[d]Equipment costs are annualized at 7.5% with a 10-year life. Videotapes are included as equipment but assumed to have a 5-year life.

[e]These figures do not take account of differences in program life.

[f]The Ivory Coast data are drawn from that presented in this section. Costs have been converted from 1975 CFA francs to 1972 CFA francs by using the deflator for the French franc (1975 = 100 and 1972 = 76.9; see Eicher and Orivel, 1976 for a discussion) and then converted to U.S. dollars (1 CFA franc = $.00405). Included in the average cost per hour figures is the annual equivalent cost of the human capital investment in the project, equal to 663.4 thousand 1972 U.S. dollars. Case (b) corresponds to the development of equation (1) to (5), while cases (a) and (c) reflect different the differing assumptions as to system efficiency discussed in the text (total capacity refers to existing facility and personnel production capacity).

presently operated (case a), is considerably more expensive on an average cost basis than any of the other ETV systems studied. Even if system efficiency is considerably improved (case c), the Ivorian system is still more expensive than any system with the exception of that of the Open University. Facility costs are considerably more expensive in the Ivory Coast than elsewhere, reflecting the considerable cost of constructing a modern, new ETV Complex. The difference in recurrent costs are even more striking, which, based on information presented in Jamison, Klees, and Wells, is probably a reflection of a larger number of skilled personnel involved in the Ivorian system more than a reflection of higher personnel salaries. Also quite significant in yielding the relatively high Ivorian ETV production system costs, is the substantial human capital investment made by the French; if the Ivorians had been able to accomplish the same results without (or with minimal) French technical assistance average costs would be reduced by $3300 for case (a) and by $1800 for cases (b) and (c).

Given the differences in the types of variables that can profoundly influence costs that were previously mentioned, international comparisons have to be viewed with a good deal of caution. In some senses it is clear that the Ivorian ETV program production system is a relatively expensive one, but an expensive system is not necessarily to be avoided, especially given the large actual and projected student enrollments which, in effect, spread the costs widely (see Eicher and Orivel, 1976 and Klees and Jamison, 1976 for an analysis and discussion). Sesame Street, the United States Public Broadcast System's educational venture, in large part justifies costs three or four times as high as those of the Ivorian system on the basis of an extremely large viewing audience. What is to be avoided however is needless expenditure, that is, cost increments that do not yield an increased quantity or quality of system output. To the extent that the Ivorian system is inefficient in this respect, careful attention should be given to possible improvements.

C. The Production Process

This part depicts the television program production process at the ETV Complex, portraying the various stages of program development and describing the job functions of the production personnel and their interrelationships. A major and well developed aspect of the ETV Complex organization--the creation of printed support materials--will be touched on only to the extent that it relates directly to television program production. Such a description helps to flesh out the organizational structure presented above in Part A and gives a fuller picture of what the costs presented above in Part B are actually expended on. Furthermore, this description is necessary to allow us to highlight the considerations which are central to questions of technical efficiency as will be discussed in parts of the following section.

The major stages followed in the making of an ETV program or series in the Ivory Coast are essentially the same as those followed in the United States' ETV production, and comprise the following steps. The major curriculum areas to be incorporated in the ETV programs are decided upon at the ministerial level. Overall objectives for each area or subject of instruction, are then transposed into an essentially behavioral format by the curriculum specialists at the Bouake ETV Complex. Sequences delineated for further behavioral specificity are then established. These sequences are gradually subdivided into "seances" which eventually emerge as individual television lessons.

Following a production seminar held in Bouake in November 1974 (see Production Center (1974)), the above described broad planning stages were further compartmentalized and refined to form a much tighter demarcation of the various steps and functions integrated in the process of program production. It was hoped that this emergent planning model which suggests a greater emphasis on personnel accountability, on establishing more precise time constraints for production completion, and on facilitating the ordering of materials and the

reserving of studio time, would inculcate a greater level of efficiency in the production complex. Figure II depicts the essential stages of that planning model. It should be emphasized that this chart and the description below primarily depicts the process as planned. In actuality, there are variations, from one subject area to another, and from one program to the next, in the degree to which the sequences outlined are followed. Departures from this planned process will be described to the extent possible.

Before elaborating on the stages of program production depicted in Figure II, it is necessary to present the basic functions of the principal actors in the process--the producer, the printed support materials writer, and the director. Both the producer and writer are supposed to be pedagogical and curriculum specialists. The writer, although primarily responsible for the creation of printed support materials, has substantial input into the initial design and into the later detailed program production sequences in Stages I and II. The producer has a wide range of responsibilities which include initial conceptualisation, detailed specification of sequences, and actual scriptwriting of the program. The director, as is usual, has primary responsibility for the filming or videotaping of the final program script, although theoretically the Ivorian model of the process has the director enter significantly into earlier stages of the program production. These job definitions will become somewhat better clarified as we expand on the skeleton outline of the process given in Figure II, although the reader should be alerted that this question of job definition is related to some of the key organizational issues and problems to be discussed in the next section.

In Stage I broad curricular areas are defined by pedagogical experts working at the ministerial level in Abidjan. The precise decision-making apparatus relevant to the choice of general curriculum objectives for primary schooling in the Ivory Coast is beyond the scope of this report, but theoretically it also involves significant input from the local level (primary school inspectors

Figure II

Major Stages of Program Production

	STAGE	PRODUCTION PROCESS WITHIN EACH STAGE	APPROXIMATE TIME FOR COMPLETION
I.	Pedagogical planning	Selection of curriculum areas Definition of overall objectives by curriculum area	
II.	Delineation of basic concepts for a series of programs	Breakdown of objectives into broad sequences Selection of media for various segments	2 months
III.	Transformation of the basic concepts into an A/V format	Script outline Choice of location Script development	1 month
IV.	Filming/Videotaping	Studio reservation and ordering of materials Shooting Film Development and Printing Editing Mixing Preview of program(s)	1 1/2 months
V.	Utilization	Broadcast of program(s) Follow-up lesson(s) by teacher Feedback and evaluation	

and, to some extent, teachers). General and specific objectives for each of the broad curricular areas are then formulated by the pedagogical specialists at the ETV Production Center (producers and writers). These in turn are sent to the Ministry in Abidjan for modification and approval. The length of time from the specification of objectives to final approval is variable. However, it is usually necessary to formulate the objectives and submit them to the Ministry for approval sometime early in the academic year prior to the shooting schedule.

In Stage II this broad list of objectives is allotted to large sequences. Choices are made as to whether television is the most appropriate medium for these sequences or whether some are best left to the written materials to explicate or are suitable for the classroom teacher to present. To accomplish these tasks, a process which takes about two months, the writer who will be responsible for creating the accompanying teachers' manual and the children's booklets, the producer of the show, and sometimes even the director all meet and work together. In the Ivory Coast, as in United States' ETV systems where, frequently, the roles of producer and director are undertaken by one person, the functions of the two tend to overlap. The director is sometimes actively involved from early on in the conception and planning of a program. And, as one might expect, it seemed that in the Ivory Coast various directors, producers, and assistant directors who were accustomed to working together operated as the core of a team for several series. More recently, an experiment, ("polyvalence"), encouraging individuals to try various functions within a production team, commenced.

For the execution of Stage III, the producer and, more specifically, the director decide on the best available means for visualizing the basic concepts of the various program segments. Sometimes a story board is used at this stage and a script outline emerges. At this time also the decision is made as to whether the program will be more appropriately shot in the studio or on

location. Supposedly final decisions are made concerning specific points of visualization (such as the number and the content of slides to be inserted; the number of animation sequences; whether to employ marionettes, actors, school children and/or presenters). Questions of set design, of lighting and audio may be discussed. Eventually a relatively final script is created, although some directors prefer to work with a fully scripted show while others favor a semi-scripted format.

In Stage IV the actual filming or videotaping of the program takes place with the director essentially in control. The various materials considered necessary are ordered by the director and arrangements are made to reserve the studios. The assistant director is assigned to certain tasks and a technical crew is assigned to the allotted studio. Cameramen, a boom operator, a floor manager, production assistants and, if required and available, a lighting man are present. On the day of in-studio shooting, the director, who usually employs a shot sheet or writes his shots on his script, plans to spend some of his preparation time in the studio blocking out positions for actors rehearsing camera shots with the cameramen. (Most of the cameramen do not use shot sheets). The director then goes to the control room and, using the monitors, practices the program negotiating "dry runs" (non-taped rehearsals).

Depending on the complexity of the program the director makes requests for special effects (sometimes added during the actual shooting), and for editing of certain parts of the show. Segments are occasionally done on film and then fed into the videotape. It is estimated that Stage IV, the actual making of the videotape from a finalized script to the completed edited product ready for previewing, takes about six weeks of time. Producers and directors are invited to attend the program preview sessions which are held once a week. The

Director of the ETV Complex sometimes attends these preview sessions. Suggestions for modification, which are usually minor at this point, may be propounded, but generally there seems to be little or no alteration of the product at this stage. Sometimes it is decided to scrap the program, but this is a rare occurrence.

In Stage V, the program or series is broadcast to the schools preceded, hopefully, by the delivery of the written materials. Stage V indicates the main features involved in the utilization of the TV program. The teachers' manuals and the materials prepared for the children are designed to be used in preparation for, in conjunction with, and to assist in "follow up" to, the programs. The final step in the process is the evaluation of program effectiveness and the feedback of such information to the ETV Production Center in such a manner as to allow improvements and modifications to take place. The history of efforts to establish a viable system of feedback and evaluation of the schools' broadcasts in the Ivory Coast has been checkered and fragmented. Various attempts at establishing systems of feedback on the programs have been made. It is proposed to comment more specifically on the internal feedback and evaluation system in the following section of the report.

An integral aspect of the entire production process that has not heretofore been examined is the education and training of Ivorian nationals relevant to needed program production specializations. Explicit in the establishment and execution of the Ivory Coast's huge ETV project was the understanding and specific endorsement of involvement of Ivorians in the total process. The gradual "handing over" to the people of the Ivory Coast of financial and management responsibility for the ITV venture and for their participation at all levels and in all job capacities is reflected in the term "Ivorization". Some thoughts and speculations on the role and function of the Ivorians in the Bouake Complex and in the process of ITV production will be made in the

following section.

In this section we have attempted to give a more complete and detailed perspective of an ETV program production system that is usually found, combining ETV production and economics concerns--to look at the overall structures, the resources that are required, the key organizational processes involved, the system output, and the economic costs. In what follows we describe and raise basic questions relevant to those key issues that we see affecting system efficiency (in both a technical and allocative sense) and system quality.

III. ETV PROGRAM PRODUCTION: KEY ISSUES

An examination of the ETV production process in the Ivory Coast, as presented above, implicitly highlights certain issues. The need for an examination of these issues is generated not only within the context of the needs of the Ivory Coast itself, but also by the desires of other developing nations to learn and profit from the Ivorian experience. To date only a few broad comparisons among ETV ventures in various developing nations have been made (see Jamison, Klees, and Wells, 1976, Wells, 1976, and Schramm, 1973). To the author's knowledge there have been no comparisons made based on micro studies within an ETV project since, as stated in the introduction to this report, few, if any, of this type of study exist.

It is proposed to highlight in this section what we perceive to be the most significant facets of the Ivory Coast program production system on which we feel Ivorian decision-makers should focus their attention and that, also, hopefully may suggest issues of which other nations should be cognizant as they launch similar systems. In Part B of the introduction to this report we described the economic efficiency and cost-quality dimensions which will serve as our framework for this analysis. Before proceeding further, it is necessary to spell out more completely the orientation we take toward educational television program production within this context.

It is essential that those of us who look at the production process in the Ivory Coast from the context of experience with, and conditioning from television in the western nations first, ourselves, establish some parameters for examining and commenting on the ETV venture of a developing nation. Quite often, approaches to the evaluation of developing nations' systems of ETV by external consultants seem to presume that "we" all arrive with agreed upon notions of what constitutes "good" television in general and of what constitutes "good ETV" in particular.

Rarely do we, the consultants, often representatives of the donor countries, meet to discuss and establish our own criteria for evaluation to begin with. Rarely indeed are we aware of what our coevaluators consider to be purposeful/good/effective ETV at home. The result invariably is that, on being in the host developing nation, one is exposed to a gamut of subjective impressions and feelings about the product and procedures, but the statements are of dubious value since a framework for comparison or for comment was not pre-established. It seems to the authors insufficient to set about an examination of the Ivorian program production process without first suggesting a suitable yardstick must be presented within broad parameters. It seems that without such a basis for comparison, objectives applied to the Ivory Coast project such as "good," "effective," or "successful" will not be very helpful.

Any attempt to establish a meaningful framework for discussion by pinpointing appropriately similar ETV systems with which the evaluators have had extensive production experience, primarily within the United States, necessarily raises questions about the U.S. projects themselves. Time and again in trying to evaluate the efficiency and quality of the production process in the Ivory Coast we found ourselves using such phrases as, "but we know little about that at home," "it's difficult to find out or estimate how much such a series would cost in the States," "is expensive/doing well/poorly/etc., compared to <u>what</u>?". In short, an examination of the Ivory Coast production system serves also to highlight concomitant questions about the United States' system (and other developed and developing nations' systems) of ETV. Although it is not generally proposed to comment on those questions, their implicit raising serves to put into focus an evaluation of the Ivory Coast ETV system.

We did not approach the exploring of the key issues in the Ivory Coast from the context of American commercial TV, nor from the context of much publicized

and highly financed ETV ventures such as Sesame Street or Electric Company. Nor did we think Public Television in general afforded a suitable yardstick. We considered a more appropriate basis to be presented by ITV endeavors as undertaken by American public school systems, or more commonly, by college and university systems and by the ITV components of Public Television systems. In these cases, more similar to the Ivory Coast's ETV goals, the objectives seem to be more directly related to the imparting of specific information and to the specific upgrading of learning. We were less concerned with similarities in size of audience or geographic area, with similarities of educational philosophy or of production techniques. The necessary similarity we saw existed in there being an instructional purpose to the message(s) transmitted by the television medium. So accepting primarily college-based or public television-based ITV as a broad yardstick, we felt we could examine the context and procedures for imparting the instructional message with a shared focus that gave direction to comments and dialogue between ourselves and to the interviews we conducted. And, hopefully, the denoting of such a yardstick will render the content of this report more substantive and meaningful to some of its readers. We should emphasize at this point, however, that we fully recognize the limitations of this yardstick analogy. The Ivorian ETV system is a unique venture, difficult to compare even with similar ventures in developing nations, let alone those in wealthier nations. Again, we have set out the above framework for only two reasons: there are sufficient parallels between the Ivorian system and those mentioned above to make such a framework useful for looking at certain questions, and there is a necessity to be explicit about our own TV production background and expertise.

In what follows we comment on what we perceive to be four key features of the Ivory Coast ETV production context: the organizational structure and utilization of resources; the process of Ivorization; feedback and evaluation; and film versus videotape production. Specific recommendations for the amelioration

of conditions are purposefully avoided given the limited acquaintance the authors have with the Ivorian system. However, general suggestions for improvement are raised explicitly and implicitly in the text and we trust that they can be evaluated, better specified, and improved upon by the concerned Ivorian decision-makers.

A. Organizational Structure and Utilization of Resources

In this part of the report questions that will center on the essentially creative process of producing a television show/program are brought to the foreground. Questions of the kind: What constitutes an efficient organization for the various members of an ETV crew involved in a creative human venture that is dependent on physical resources? What constitutes an efficient utilization of these physical resources? How do personal interrelationships and the working environment affect the level of efficiency? This arena of questions, integral to the organizational structure of an ETV production center--questions that are infrequently asked, and almost never answered, in United States ETV--we now attempt to open for brief examination in the case of the Ivory Coast.

With regard to personnel functions within the Bouake Complex, there were attempts over the past few years to delineate tasks specifically for each major production crew member - the producer, the director, and the writer. This marked an attempt to increase efficiency and encourage task completion within established timeframes. But it seems that while such a breakdown of the working day/week may encourage accountability and foster efficiency it may also, in a creative context, hinder productivity. In the case of the Bouake Complex where various training backgrounds crossed many aspects of the creative arts, people seemed to move into areas other than their own, to do jobs not specifically assigned to them in order to complete the TV programs. This "let's get the job done" attitude, a phenomenon witnessed in most small ETV production centers, encourages people to perform any task necessary to bring about the completed product. In many cases, without such an attitude, the end product would be hopelessly delayed and frustrations increased. This tendency has been more formally encouraged with the most recent introduction of the system of "polyvalence," whereby producers,

directors, and writers are encouraged to become more involved in each others' tasks.

While such a system reduces the problems of tight compartmentalization of job functions it brings with it problems of accountability and the diffusion of an individual's focus and expertise. Such considerations are essential to questions of technical efficiency--the ability to organize one's resources in order to achieve the maximum effectiveness possible. As this question is of importance to this study, it is necessary to elaborate on our impressions of the working context we observed at the Kosuke ETV Complex, especially those related to the functioning of the key production personnel--the director, the producer, and the writer.

Often it appeared that the functions of the director were spread into areas other than a director's traditional domain. Often he or she (there were few women employed in this role) completed a variety of pedagogical, technical, and even engineering tasks before the stage in the production process where his function usually begins. The directors were further hampered by not infrequent breakdowns in equipment (particularly in relation to exterior shooting), by the inadequate training of their assigned TV crew (as well as their own, see Part B below), and by the consequent abbreviated time slots afforded for their dryruns. More than occasionally, for example, cameramen are not sure of their prescribed shots, or the production team arrives at the studio and finds there is no film in the camera, and precious studio time gets wasted. The subsequent falling behind in production schedules, the awareness of completing a less-than-polished show/series produced evident frustration among the directors and their assistant crew members.

Many of the same frustrations felt by directors are evident among producers. As necessity often dictates producers becoming involved beyond the final script stage, and due to the high degree of interpersonal interaction at

the Complex, they personally experience the above mentioned problems and delays. Furthermore, the producers who are Ivorian also have the role of presenter on the television programs (little or no training is given to them for this task). To the extent that this occupies their time, the efforts that they can devote to working as and being trained as producers is lessened. Moreover, it is currently required by the Complex administration that all Ivorian producers have equal opportunities to be presenters, which is accomplished by means of a somewhat formalized rotation schedule. Although this may be gratifying in terms of personal prestige, it would seem to be more efficient to utilize those Ivorians with the best presentation skills as presenters and those with the best producer skills as producers. A related problem is that it is considered higher status for an Ivorian to be a director than a producer, although there is no salary difference. Thus often the best producers are "promoted" to be directors. These two tasks bear little relationship to each other in the skills needed, and such practice seems to follow the lines of the "Peter Principle" more than system efficiency. As a point of some interest, in no case was a woman seen in a presentation role and, on questioning, only one case of a woman ever having done so was reported.

The writers, responsible for the creation of the written support materials for the teachers and pupils in the schools, are necessarily committed to having these materials ready for printing a substantial time in advance of the completed videotaped program. In some cases, because of this time differential, and unforseen changes ensuing in program composition, the produced written material does not effectively tie in with the transmitted product. This problem is not amenable to simple solution, although the system of "polyvalence" is in part an effort to tie more closely the work of the producer and the writer. However, the real key is obviously getting enough lead time on production so that the finished ETV program is ready at the same time, or preferably, prior to the time

the written material must go to the printers.

Our brief observations of ongoing production and transmitted programs gave the impression that full advantage was not being taken of the sophisticated control room and studio capabilities. Generally programs seemed to be shot in a more hurried fashion and in a simpler format than the long hours of planning and the technical capacity would seem to merit.

All the problems pointed out above should in no way obviate the many good points observed. Programs are completed, a major accomplishment, and with more care and sophistication than we have observed in many other developing countries' ETV projects or within small ETV systems in developed nations. There is a reasonable amount of diversity in production techniques. The printed support materials are extensive and in general tie in quite closely with the television curriculum. Finally, and perhaps most importantly there was much evidence of ability, willingness, basic motivation, and pride in accomplishments among many of the ETV Complex personnel.

The roots of the basic problems are not easily pinpointed. It is clear, however, that such problems are not new, but have been with the Ivorian project since its inception. The two reports of a German consultant to the project, Volker Dörr (1974, 1973), examines many of the problems discussed above in more detail (and makes a number of worthwhile specific recommendations to alleviate them which are summarized in Appendix B below), and these same problems still appeared significant to us on our visit, three years later. The ETV Complex administration is evidently aware of many of them. The purpose of the meetings held in 1974 among production personnel (see Production Center, 1974) was to grapple with some of them, and the more formalized production process planning system recently instituted, described in Part C of the previous section, is aimed at alleviating some of them.

A report currently being prepared by the DOCE highlights the significant extent to which current program production output falls below the theoretical

capacity of the physical facilities to handle. Taking a position that might at first appear somewhat contradictory, Volker Dörr (1974) points out that the volume of production accomplished (let alone the much larger volume planned) is more than the number of directors available (in 1973) could handle according to professional standards observed in Western Europe and in Canada. Both the DOCE's and Dörr's observations may be the case, in that perhaps some studio time does go unused, and the demands of the planned production schedule could be met with existing facilities if additional human resources were available (this corresponds to cost case b in Section II). But such a solution is probably only partial at best; the studios seemed to be occupied (or at least scheduled to be occupied) through much of the working day. It is more likely that some of the organizational suggestions made in the text of our observations above, and, even more importantly, some of the observations to be made about training and Ivorization in Part B below, are crucial to improvements in system efficiency. In cost terms, such improvements may both lower the unit costs reported upon the previous section, as well as improve the quality of the output. Television production is a creative process and that creativity needs to be directed toward program content and format, not toward expending vast energies to ensure that what should be relatively straighforward production tasks are accomplished.

B. The Process of Ivorization

A permeating and fundamental issue in the introduction of a large scale ETV system as part of a developing nation's system of reform is that of allowing for, and encouragement of, the training of the people of that country in all aspects of the system's management and utilization. The centrality of this issue in the Ivory Coast project is attested to by the prevalence of the word "Ivorization" in all of the reports and in most discussions with Ivorian officials. Once again, this should be a question of interest to other developing

nations that turn to the industrialized nations for the technical expertise often needed to establish their systems. Also, as we will see below, it is an issue of singular importance to the efficiency and quality of an ETV system such as that in the Ivory Coast.

In addition to examining reports of historical and future rationales and plans relative to the Ivorization process, we brought up the question in interviews and discussions. Not surprisingly, the raising of this issue exposed us to many instances of subjective impressions and experiences, anecdotal reference, feelings of frustration, statements about personal interrelationships, and sometimes elements of prejudice. We allowed this process of "ventilation" to permit our own perceptions and impressions to develop. (We were assisted in garnering our impressions and thoughts by the company of an Ivorian trainee assigned to the Evaluation Unit, in whose presence this issue was persistently raised.)

First of all, we should ask what does "Ivorization" mean in relation to the ETV production process in Bouake? On a long term basis, it supposedly means that at some point in time (1980 has been planned for) Ivorians will fill all functions within the Bouake Complex. In the meantime, the process of Ivorization entails the systematic training of the Ivorians in the skills necessary to the production process. Below we examine the formal training given to Ivorian producers, directors, and technicians.

Ivorian producers are selected from the ranks of primary school teachers. There seems to be no systematic criteria for who is selected; chance and informal connections appeared likely to predominate. Little formal training for producers was established in the early years of the project, although a very few of the better candidates were sent abroad (usually to France or Belgium) for specialized training. A few more have gone in recent years. However, about a year

and a half ago (in the Fall of 1974) the Special Section for Educational Technology (SSTE) was established at the Bouake ETV Complex to specifically train Ivorians as producers (and directors). About one dozen Ivorian producers were picked to go to SSTE for a year of fulltime training when it opened, although those selected were not necessarily the better candidates since the demands of the production schedule made it necessary to keep the latter working on the job. To accomodate better to production needs, since January of this year SSTE has been operating on a different schedule, whereby all Ivorian producers spend one week a month in fulltime training.

Ivorian directors are chosen from the ranks of Ivorian producers (as mentioned in Part A above). The management of the Complex tends to choose the best producers to become directors. The formal training pattern for Ivorian directors follows closely that of producers. When the project began, those Ivorians selected to be directors were given some initial intensive training, but after a short time the production schedule demanded their beginning fulltime work. Some have been sent abroad for specialized training; most recently, 10 Ivorians were sent early this year for a one year period. Again, the SSTE has provided some formalized instruction for those directors at the Complex since the Fall of 1974.

For some production technicians training has been provided by SERTI (the Studio School of the Ivorian Radio-Television network). Also, about two years ago the Complex brought in a highly qualified specialist from ORTF in Paris to run Wednesday morning training sessions for technicians. Such sessions were compulsory for Ivorian technicians to attend at first, but after about a month enrollment dropped to only a few students. Some of the problems supposedly were the low level of general educational background of the technicians, the difficulties some had with the French language, and the difficulty the ORTF

specialist had working in this environment.

Discussions with some of the French technical assistants at the complex left us with the overall impression that although some of the Ivorians working in these capacities--producers, directors, and technicians--are both motivated and skilled at their tasks, a large number of them are not. There are several plausible reasons for such a state of affairs (if it is in fact true). First, the backgrounds of those Ivorians recruited to these positions do not seem to be directly relevant to their positions. Persons trained as primary school teachers are not necessarily the best choice for selecting cadres of producers and directors (the questionable practice of choosing the better producers to become directors has already been commented upon), nor is any effort apparently made to find reasonable criteria to select from the ranks of primary school teachers. Technicians are not infrequently drawn from the ranks of much less educated and low skilled Ivorians.

Second, the training given to these Ivorians for the most part appears to be insufficient to accomplish the necessary Ivorization of the ETV Complex functions. A number of different training schemes have been initiated, but the many problems confronted, led to their not being pursued sufficiently. A principal problem seems to have been the heavy demands made by the planned production schedule, which, in essence, forced much more attention to be paid to production than to training.

A main source of many of the above problems seems to lie in the lack of a strong incentive structure operating at the Complex. There is little upward mobility for Ivorians in any capacity. Promotion within Ivorian civil service categories relies primarily on formal education and examinations, not on competence on the job or on the type of training that is offered to the Ivorians. Moreover, there are already institutions within the Ivory Coast that do train Ivorian for positions in TV and film, but those Ivorians, especially,

the better ones, who come out of such institutions will usually choose not to work at the Complex because the salaries they can earn there are considerably less than they can earn elsewhere. The salaries of technicians especially are extremely low. A study in March of last year (see Information Unit, 1975) indicated that the only high level Ivorian technician (civil service grade A) at the Complex was the Assistant Director of the maintenance operation. It is believed by many, and it has occurred to some extent already, that those Ivorians who receive specialized training abroad will return to positions elsewhere in the Ivory Coast that are more highly paid than those at the Complex.

Up to this point we have examined Ivorian training, and its associated problems, as the principal component of the Ivorization process. However, much of the training of Ivorians takes place on-the-job, under the supervision of the French technical assistants. In such a context the background and training of the French contingent at the Complex is equally as important to the Ivorization process as the considerations discussed above.

No reliable summary data were available on the training and background of the French technical assistants. Informal estimates indicated that only about half of them have had prior training specific to their work areas. Those who do not must acquire their skills on-the-job. This is not surprising since a significant proportion of the French technical assistants are young men who are fulfilling their military service obligation by working at the Complex. Moreover, those French who do have the requisite technical background were mostly trained in film production and thus have to master the entirely different procedures necessary for videotaping. Further, it is difficult to attract the more highly qualified specialists from France given, for example, that a director at ORTF can earn several times more than is paid French directors at the Complex. These shortcomings in training and experience are significant in themselves in an ETV center committed to a relatively large volume of program

production every week. They become doubly significant when one remembers that the French are also supposed to train Ivorians.

Inevitably such a situation as described above is frustrating to both the French and the Ivorians at the Complex. The theoretical commitment to the necessity of Ivorization has existed since the project's inception. Some attempts have been made to provide the training and expertise necessary to its accomplishment. Plans for the future call for more attention and effort to this pressing need (as discussed in the Information Unit, 1975 report on the study of technician training, and in similar studies currently being conducted by the DOGE on the training background and needs of other Complex personnel). Nonetheless, training alone is insufficient without a rational selection mechanism for who is to be trained (this holds for both Ivorian and French personnel), and without an incentive structure sufficient to attract and motivate well qualified individuals. There are clearly monetary costs to improving on these latter possibilities and there is always the question as to whether the increase in the quality of the product is worth the increased expense. It is the judgement of the authors that, given the inefficiency problems discussed in Part A above, such an investment is quite worthwhile, and can contribute to a better product. This is especially true when we consider the very large number of students presently served by the system and the rapid growth projected for future years—production costs are a relatively small component of an ETV system costs in per student terms.

C. Feedback and Evaluation

An integral component of well structured ETV programming anywhere is that of evaluation of the produced programs and of those in the process of production. Regardless of format of presentation this function most explicitly separates ETV from commercial TV programming. For ETV to be considered effective, for the expenditures to be deemed well spent, the programs must answer for meeting

certain instructional objectives.

In the case of the Ivory Coast the historical mosaic of evaluatory efforts reflects both the acceptance of the purposefulness of the function and also the problems in establishing a viable system for its execution. Once again the Ivory Coast mirrors some prevalent shortcomings of the United States' and other countries' educational television systems. In contrast with the general ETV picture in the United States, however, the issue of general reform was first raised, the introduction of the medium of TV to take major responsibility to effect the educational changes came second. Unfortunately, in most cases in the U.S., the introduction of sophisticated equipment, the issue of technical clarity, etc. precedes questions of purpose of ETV utilization. Central, broadly stated objectives affecting national questions of reform were first established in the Ivory Coast. But the ETV system, responsible for transmitting a series of instructional programs, had to confront more explicit questions of effectiveness.

For the first year or two of the project there was a feedback service attached directly to the Production Center at the Bouake Complex. The members of this service went out to schools, observed classrooms, talked with teachers and students, set up regular weekly meetings with producers, and performed special testing services on certain production sequences. However, the results of their work are felt to have been little utilized and most members of this feedback group returned to France after a year or two. At that time more of the administrative apparatus of the ETV system was moved to Abidjan. The functions of the feedback service were incorporated in the Evaluation Unit of the system--with an external evaluation unit centered in Abidjan, concerned with longer term summative evaluation, and an internal evaluation unit centered in Bouake, to take over the functions of the feedback service, as well as to aid in the evaluation needs of the teacher training institutions located at the Complex. It seems, however, that in recent years the ETV program feedback and

evaluation capabilities of this internal evaluation unit has been little utilized. Over the past year or two there has been an effort to have the ETV program producers themselves go out to classrooms periodically (budget and time limitations confine such visits to the area immediately around Bouake) to observe their programs, but the extent to which this is done is unclear.

Other elements of program production feedback and evaluation are contained in the Teacher Journal and the in-service teacher training programs discussed in Section I of this report, in the sense that classroom teachers raise problems that these programs sometimes discuss. A more systematic examination of class and teacher reactions to programs is supposed to be undertaken by primary school inspectors stationed throughout the country, but this means of obtaining information is not by any means rigorously scheduled. One additional element of feedback are the preview sessions held at the Complex weekly, but the difficulties of such a system of peer criticism do not usually generate a large amount of tangible benefits.

Probably the principal difficulty faced by any ETV program production system in generating systematic, well researched evaluation and feedback information is the expense--both in time and money--of making substantial revisions to completed programs. The Ivory Coast's system is no exception and, as indicated, the demands of the production schedule set up by the project management (especially given the considerations discussed in Parts A and B above) allow little time for serious attention to program revisions.

Again, we have what appears to be a cost-quality tradeoff. Feedback can improve the quality of the output, but at a cost of additional expenditure or of a smaller program output. Given the imperatives of the Ivorian government to transform the primary school system, it is unlikely that substantial account will be taken of program feedback and evaluation information until after all

six years of initial programming is completed. Some considerations relevant to this latter point will be discussed in the concluding remarks of this paper.

D. Film versus Videotape

Of some interest to other countries is a brief recounting of the experience of the Ivory Coast in utilizing both film and videotape media. For the first few years of the project almost all ETV programming in the Ivory Coast was created on film. There were two major reasons for proceeding in this manner. First, the equipment donated to the project by the French government, which was purchased by France from Thompson, was primarily film based. Second, the French technical assistants (especially the higher level advisors) recruited to work on the project were individuals who had been trained in the use of film production. The switch to videotape that is presently occurring has been promoted by the departure of some of the French film specialists and by the recruitment of others who have more exposure to videotape production. But more significant again seems to have again been the demands imposed by planned production. Film production, including printing, developing, and editing, is a more time consuming process than videotape production and thus to "get the product out" more and more reliance was placed on videotaping.

There are certainly cost differences between film production and videotape production, but more detailed cost data than are available from the Ivorian project would be needed to investigate them carefully. However, since almost every major and minor ETV venture we are aware of is based on videotape production rather than on film production, it is likely that the former is considerably more economical, assuming that trained people are available who know how to utilize the equipment. With the major advances that are being made in videotape equipment, there is scarcely any task that can be more easily accomplished by film (although for certain animation techniques, which requires precise editing, film presently has some advantages). The Ivory Coast's use of film seems mostly

traceable to historical circumstances; it is likely that future years will see a complete shift to videotape production and it seems sensible to conclude that other countries planning similar ETV ventures should use the videotape medium from the outset.

IV. CONCLUSIONS

In this report we have examined the system of educational television program production employed by the Ivory Coast for its primary school reform effort. We have attempted to combine the perspective of an ETV program production specialist with that of an economist well versed in the examination of instructional technology systems. The intent was both to describe the system in as much detail as possible, in order to allow other countries to get a better idea of exactly what the Ivory Coast is getting for its investment, and to analyze certain critical aspects of the system that will affect system efficiency and quality, in order to be of aid to decision-makers in the Ivory Coast and to other nations concerned with establishing an effective system.

A year from now the Ivorian ETV system will have completed a major task--the initial coverage of the full six grades of primary school with instructional television programs and printed support materials. By this time also, the ETV Complex should be moved into its new, modern facilities. The question is then raised as to what constitutes the most effective and efficient utilization of the resources of their program production system.

There has been considerable discussion of the possibility of quickly expanding ETV system coverage to the secondary school level. This decision has not yet been made according to officials in Abidjan, although many production personnel at the Bouake Complex consider it quite likely. To do so takes advantage of the technical and human resources and facilities that have been developed at the ETV Complex and fosters what some consider to be needed curricular reforms at the secondary level. However, it is likely that such an immediate extension of ETV programming to the secondary level will not leave sufficient resources available to deal with some of the critical problems faced by the primary school ETV system that we have pointed out. A number of the

problems mentioned have not been adequately dealt with in large measure because production plans were too ambitious, and allowed little time for reflection or pause. A decision to continue these large production demands without straightening out the most glaring system deficiencies may not be in the best interests of either the primary or secondary school systems. It appears most sensible to the authors to slow down the production schedule considerably after CM2 is covered next year, and to concentrate resources on the development of a more efficient, more highly skilled program production system--a step that could likely improve system quality as well as lower future unit costs.

In summary, the major ingredients for an efficient system of ETV production--the creation of a program or series from conceptualization to evaluation--do exist in the Ivory Coast. The task ahead for the Ivory Coast would seem to be one of more fully developing this system's potential. Other nations should be able to learn much from the past successes and failures of the Ivorian system, as well as from its future efforts to solve some of the problems it now confronts.

APPENDIX A

GLOSSARY OF ACRONYMS

BDAF	Banque de Documents d'Auto-Formation
CAFOP	Centre d'Animation et de Formation Pedagogique
CP1	Cours Préparatoire 1ère année--first grade
CP2	Cours Préparatoire 2ème année--second grade
CE1	Cours Elémentaire 1ère année--third grade
CE2	Cours Elémentaire 2ème année-fourth grade
CM1	Cours Moyen 1ère année--fifth grade
CM2	Cours Moyen 2ème année--sixth grade
DOCE	Division d'Organisation de la Gestion de l'Education
ENI	Ecole Normale d'Instituteurs
ORTF	Organisation Radio-Television Francaise
SAVC	Section Audio Visual Centrale
SEEPTE	Secretariat d'Etat de l'Enseignement Primarire et de la Television Educative
SERTI	Studio Ecole de Radio-Television Ivoirienne
SINCRO	Societe d'Informatique, de Conseils et de Recherche Operationnelle
SSTE	Section de Specialisation en Technologie Educative
USAID	United States Agency for International Development

APPENDIX B

PRODUCTION PROBLEMS DESCRIBED AND SOLUTION RECOMMENDED BY VOLKER DÖRR (1974)

This is a brief outline of the ETV production system problems addressed and the tentative recommendations for amelioration offered by Volker Dörr (see Dorr, 1973, 1974), a German consultant to the Ivorian ETV project, who spent several months in Bouake during 1973. Most of these problems still appeared to be significant upon the authors' visit in 1976. (P = problem; R = recommendation)

1. P. Scenarios for scripts often contain passages that cannot be transformed into a TV program given the personnel, time, money, and equipment constraints at the Complex.

   R. (a) An experienced director is needed to advise the producers (who are also the scripturiters) on what is realistic.

   (b) Better planning and coordination is needed within the Production Center. Production sequences should be elaborated considerably in advance of the date necessary for program completion. Producers should be given a specified budget and control over how that money is to be allocated.

2. P. An insufficient number of directors to accomplish planned production.

   R. Make production targets more realistic and/or attract more and better directors, which will necessitate increasing their salary.

3. P. Insufficient training of Ivorian directors.

   R. Reduce the production demanded of the Ivorians and increase the number of French directors to allow for sufficient on-the-job training.

4. P. The linkage between pedagogical content and program visualization is not as strong as it should be; the action, the dialogue, and the set need to have more attention paid to them. Furthermore, the pedagogical and program style is distinctly European and does not take enough account of the differences inherent in the Ivorian culture.

   R. Initiate a seminar for producers and directors that analyzes existing programs from these perspectives.

5. P. The expenses allocated to meet the requirements of filming programs on location are not sufficient to allow quality work, are disbursed late, and involve a lot of red tape to get authorized.

   R. Streamline the budget allocation process and increase the allowances substantially.

6. P. As a result of some construction defect the film developer can only handle "Plus X" film when "3X" and "4X" are often more appropriate to the shooting needs. The stocks currently on hand of the latter types of film will deteriorate.

   R. As the machine seems irreparable, purchase a new one.

7. P. The short term preparation needed for shooting a script is not carefully done. Everything seems to get done at the last moment--there are problems obtaining sets, graphics, actors, vehicles, etc. Directors have to spend their valuable time accomplishing tasks that should be outside their domain.

   R. Dörr recommends a reorganization of tasks and management that better specifies responsibilities.

8. P. Frequent breakdowns of equipment compounded by the fact that often no one is aware of the breakdown until the shooting is about to begin.

   R. Better training of technicians is necessary, as well as the establishment of a system whereby certain technicians are responsible for certain specific pieces of equipment.

9. P. Insufficient specification of the different responsibilities of the producer and the director, often yielding confusion, delays, and poor quality programs.

   R. Dörr recommends continuing a team approach that allows a certain degree of liberty in the division of work, but to specify in much more detail the general division of responsibilities. Dörr goes on to suggest quite concretely a sensible distribution of tasks.

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